REPORT ON

STATE-WISE RPO/RCO TRAJECTORY TO ACHIEVE NATIONAL TARGET.

November 2025

Forum of Regulators (FOR)

Table of Contents

List of Tables

List of Figures

Abbreviations

APPC	Average Power Purchase Cost
BEE	Bureau of Energy Efficiency
BSPHCL	Bihar State Power Holding Company Ltd
CAGR	Compound Annual Growth Rate
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CUF	Capacity Utilization Factor
DC	Designated Consumers
DRE	Distributed Renewable Energy
DSM	Deviation Settlement Mechanism
EA	Electricity Act, 2003
EC	Energy Conservation Act, 2001
EPS	Electric Power Survey of India
ESO	Energy Storage Obligation
FOR	Forum of Regulators
FY	Financial Year
GUVNL	Gujarat Urja Vikas Nigam Limited
GW	Giga Watt
JBVNL	Jharkhand Bijli Vitran Nigam (JBVNL)
JERC	Joint Electricity Regulatory Commission
MNRE	Ministry of New and Renewable Energy
MoP	Ministry of Power
MSEDCL	Maharashtra State Electricity Distribution Company Limited
MSW	Municipal Solid Waste
MW	Mega Watt
NFFO	Non-fossil fuel Consumption Obligation
OA	Open Access
PLF	Plant Load Factor
RA	Resource Adequacy
RCO	Renewable Consumption Obligation
RE	Renewable Energy
REC	Renewable Energy Certificate
RPO	Renewable Purchase Obligation
SDA	State Designated Agency
SECI	Solar Energy Corporation of India

SERC	State Electricity Regulatory Commission
SERC	State Electricity Regulatory Commission
SLDC	State Load Despatch Center
ToR	Terms of Reference
UPPCL	Uttar Pradesh Power Corporation Limited
VPPAs	Virtual Power Purchase Agreements
VRE	Variable Renewable Energy
WG	Working Group
YoY	Year on Year

Executive Summary

India's has set an ambitious target of achieving 500 GW renewable energy (RE) capacity installation by 2030, making Renewable Purchase Obligation (RPO) and Renewable Consumption Obligation (RCO) key policy instruments for accelerating RE adoption. RPO has been an effective tool introduced under Electricity Act 2003 (EA 2003) to promote renewable energy (RE) development and adoption across India. Considering the RE capacity addition target of 500 GW at national level by 2030, Ministry of Power (MoP) has set the RPO targets from 24.61% in FY 2022-23 to 43.33% in FY 2029-30 under the notification published on the RPO and Energy Storage Obligation (ESO) trajectory in July 2022 under the EA 2003. This notification classifies RPO targets into Wind, HPO, Other RPO with ESO trajectory of 1% in FY 2023-24 to 4% in FY 2029-30.

In October 2023, MoP published a notification on the minimum share of electrical energy consumption from Non-Fossil Fuel RE Sources/ RCO targets under Energy Conservation (EC) Act, 2001. As per this notification, RCO targets are classified into Wind RE, Hydro RE, Other RE and Distributed RE (DRE) with the targets ranging from 29.91% in FY 2024-25 to 43.33% in FY 2029-30.

Given the wide variation in RE potential & installed capacity, RE contracted capacity based on power procurement planning, transmission corridor availability & reliability aspects across the States Vs uniform RPO/ RCO targets proposed by MoP at national level, the Forum of Regulators (FOR) RE Working Group (WG) undertook a detailed study **"To examine RPO/ RCO trajectory specified by MoP for non-RE rich States and explore innovative mechanisms and regulatory interventions to achieve national level RPO/ RCO trajectory by FY 2029-30."** The scope of work to conduct a study covers following:

1) To undertake comparative analysis of RPO trajectory under unified RPO target notification vis à vis SERC RPO Regulations for twelve States from all five regions of India.
2) To identify implementation & operational challenges including cost benefit analysis to implement unified RPO trajectory, from State perspective
3) To examine and recommend RPO trajectory for States with different levels of RE penetration
4) To explore feasibility of fungibility of RPO in the context of growth of various RE technologies
5) To explore innovative mechanisms and regulatory interventions to implement the RPO trajectories for States

Accordingly, detailed approach is developed to conduct the study is elaborated in figure 1 of chapter

3. The detailed study and analysis are carried out to evaluate following aspects:

1. Possible RPO/ RCO target achievement at National Level by FY 2029-30 in different scenarios. 3 cases are developed to project RE capacity addition by FY 30 based on:
    - Case 1: State wise RA plans
    - Case 2: 3-year CAGR from FY 22 to FY 25
    - Case 3: 50-58 GW capacity addition possible YoY.
2. Possible State level RPO/ RCO target achievement by FY 2029-30 based on resource adequacy plans of States published by CEA
3. Financial impact of uniform RPO/ RCO on selected 12 States for the study

Key findings from the analysis:

1. Possible national level RCO achievement

From the analysis of 3 cases, it is observed that RE capacity may reach up to 520 GW by FY30 as per case 1, 465 GW as per case 2 and 500 GW as per case 3. Accordingly, the RCO achievement under different case scenarios are summarized below:

Particular	FY 26	FY 27	FY 28	FY 29	FY 30
RPO/ RCO Targets as per MoP	33.01%	35.95%	38.81%	41.36%	43.33%
Case 1: % RPO/ RCO Achievement as per RA Plans	29.93%	36.13%	40.13%	42.53%	44.62%
Case 2: % RPO/ RCO Achievement as per 3 Year CAGR	26.96%	29.38%	32.35%	35.99%	40.43%
Case 3: % RPO/ RCO Achievement assuming 50 GW & above cap. add. YoY	29.0%	32.9%	36.7%	40.4%	44.0%
Suggested RPO/ RCO trajectory at National level	**29.0%**	**33.0%**	**37.0%**	**40.0%**	**43.0%**

Considering the current capacity addition trend projection and the RPO/RCO achievement under different case scenarios it is observed that case 3 would be the most suitable and achievable trajectory at the national level by FY 30. It also aligns with 500 GW RE capacity target set by Government of India. Accordingly, RPO/ RCO achievement at national level is recommended as specified in table above with the objective of achieving a national level target of 43% in FY30.

2. Possible State level RCO achievement

To achieve the suggested national level RCO targets, it is important to evaluate State wise possible RCO achievement. Hence, State wise possible achievement is evaluated considering RE capacity addition plan/ contracted capacity projections by FY 30 as per RA plans and technology wise State wise CUF/

PLF. From the possible achievement based on RE capacity addition as per RA plans, it is recommended that a common goal with differential approach can be implemented by grouping of the States for setting up the State wise RCO trajectory. The grouping of States can be based on possible RCO achievement as per the RA plans in FY 26 as per the graph shown below:

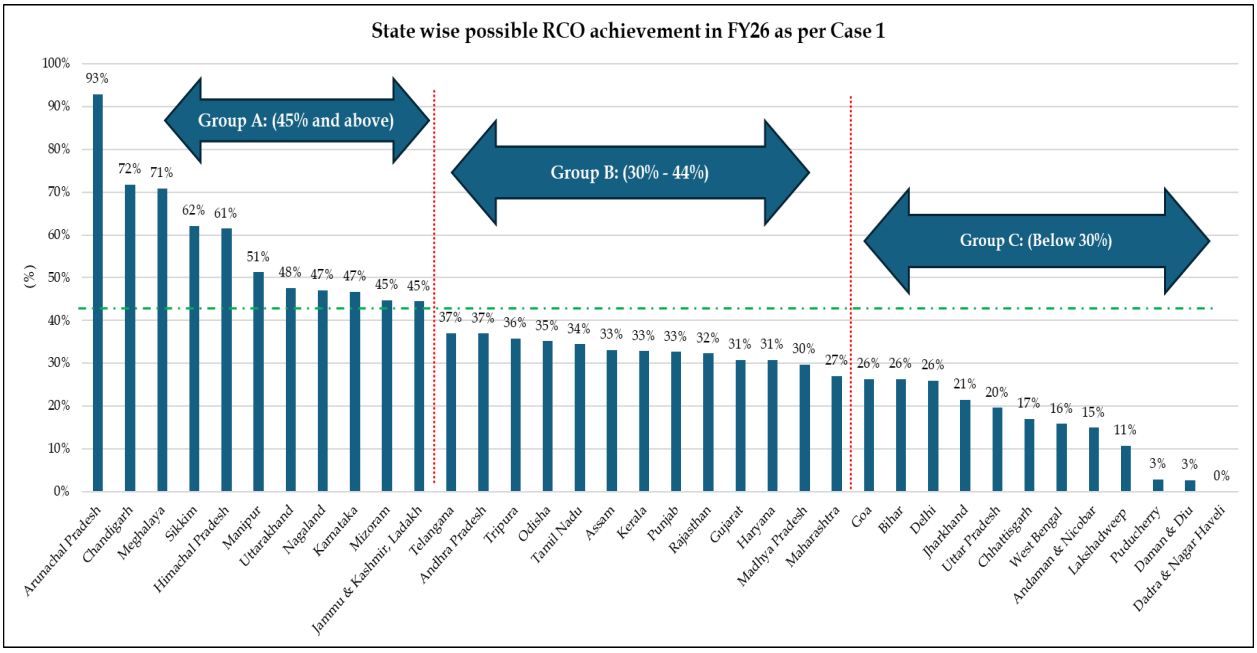


Figure 1: Grouping of States based on RCO achievement in FY 26

(Maharashtra is one of the RE rich States. Hence, although achievement as per RA plans as well as MYT Order of MSEDCL is lower in FY26, it is considered in Group B)*

- **Approach for setting State wise RCO trajectory**
  - **Step 1:** Grouping of States based on possible achievement as per RA plans in FY26
  - **Step 2:** Set incremental RCO trajectory from FY 26 to FY30 as follows:
    - **Group A:** RCO based on achievement in FY26
      - **Group A1:** Constant for Special Category States like Northeastern & Hilly region
      - **Group A2:** RE rich States with 2.5% increase YoY
    - **Group B**: RCO based on achievement in FY26 with 3.5% increase YoY
    - **Group C**: RCO based on achievement in FY26 with 4.5% increase YoY

Based on the above approach, suggested national level targets can also be achieved by FY30. The grouping of State and State wise suggested trajectories are covered under chapter 5.

3. Impact assessment of uniform RCO on APPC of States

Impact of RCO on States is computed considering 2 approaches. Approach 1 considers uniform RCO targets and Approach 2 follows Differential RCO targets for States based on possible RCO Achievement and suggested RCO trajectory w.r.t. grouping of States.

From the impact assessment, it is observed that State wise RCO trajectory based on grouping of States will be beneficial to reduce APPC of DISCOM/ State compared to current APPC as well as APPC in case of uniform RCO trajectory by MoP is mandated.

Overall recommendations- Proposed RCO trajectory at national level and State level

Through a comprehensive assessment of policy developments, State specific RE dynamics, capacity addition trends, and financial impact assessment, the FOR Working Group concludes that:

- Envisaged RE capacity addition is important to achieve to meet the set RCO targets by FY30.
- India can realistically achieve 43% RPO/RCO by FY 2029–30, aligned with the national target of 500 GW RE capacity. But the current MoP uniform trajectory will not be fully achievable from FY 2025-26 to FY 2028-29.
- A realistic and phased national trajectory and differential State-wise targets are essential.
- At national level, achieving MoP RCO trajectory from FY26 to FY29 could be difficult to achieve. Hence, it is proposed to set national level RPO/RCO trajectory as below:

Particulars	FY 26	FY 27	FY 28	FY 29	FY 30
Proposed RPO/ RCO trajectory at National level	29.0%	33.0%	37.0%	40.0%	43.0%

- Grouping of the States can be done based on capacity mix of RE in States, existing level (or baseline) of RPO accomplishment by the State up to FY 25 and accordingly RCO with differential approach can be set for non-RE rich States with the objective to achieve suggested national level RCO trajectory above.

1. Background

The Forum of Regulators (FOR) is an apex body constituted through Central Government notification dated 16 February 2005, in pursuance of the provision under Section 166 (2) of the Electricity Act 2003 (EA or Act). It consists of the Chairperson of Central Electricity Regulatory Commission (CERC) and Chairpersons of State and Joint Electricity Regulatory Commissions (JERCs and SERCs). The Chairperson of CERC is the Chairperson of the Forum.

1.1. Formation of WG

The FOR, in its 86th meeting held on 26 June 2023, decided to constitute a Working Group (WG) headed by Chairperson, Karnataka Electricity Regulatory Commission (KERC) for conducting a detailed examination of all the RE-related policy & regulatory issues.

The member composition of the Working Group is as follows:

1.	Chairperson, Karnataka Electricity Regulatory Commission (KERC)	Chairperson of the Working Group
2.	Chairperson, Rajasthan Electricity Regulatory Commission (RERC)	Member
3.	Chairperson, Himachal Pradesh Electricity Regulatory Commission (HPERC)	Member
4.	Chairperson, Tamil Nadu Electricity Regulatory Commission (TNERC)	Member
5.	Chairperson, Maharashtra Electricity Regulatory Commission (MERC)	Member
6.	Chairperson, Odisha Electricity Regulatory Commission (OERC)	Member
7.	Chairperson, Andhra Pradesh Electricity Regulatory Commission (APERC)	Member
8.	Chairperson, Meghalaya State Electricity Regulatory Commission (MSERC)	Member
9.	Member (Finance), Central Electricity Regulatory Commission (CERC)	Member
10.	Chief (Regulatory Affairs), Central Electricity Regulatory Commission (CERC)	Member Convenor

1.2. Terms of Reference

The Terms of Reference (ToR) of RE WG are as below:

a) Examine and review the Policies and Regulations on RE at the Centre and in the States considering the target set for RE capacity addition in the Country.

b) Identify and suggest measures for harmonization of RE policies and regulations.

c) Assess the impact of increasing the share of RE in the overall energy mix and suggest suitable policies and regulatory measures.

d) Examine the issues involved in implementation of the distributed energy resources (group/ virtual net metering etc.) and suggest suitable measures.

e) Examine Renewable Purchase Obligation (RPO) targets set by the Government and the Regulatory Commission for harmonization; Assess and suggest measures for ensuring RPO compliance targets by the obligated entities.

f) Any other matter related and incidental to the above.

The Secretariat of the Forum of Regulators provided all the secretariat services to this Working Group.

2. Summary of Working Group Meetings

The WG held thirteen meetings to understand Renewable Energy (RE) related Policy and Regulatory Matters along with its perspective and issues involved in it. The RE WG is mandated to examine RPO targets set by the Government of India and the Regulatory Commission for harmonization and according assess and suggest measures for ensuring RPO compliance targets by the obligated entities as per the RPO trajectory decided.

Accordingly, the discussions were held in the 2nd RE WG meeting on the notification issued by MoP dated 20 October 2023, specifying the minimum share of consumption of non-fossil sources/ RCO by designated consumers. Considering the policy and regulatory developments by MoP through different RPO and RCO notifications, during the 4th RE WG meeting, RE WG decided to undertake a detailed study for stipulating the norms with regards to RPO/RCO trajectory for States based on the market reality and State specific issues.

The FOR WG meetings in which Renewable Purchase Obligation (RPO) / (RCO) were discussed and the proceedings of those meetings are summarized as below.

2.1. Second Meeting of the Working Group

The second meeting of the WG was held in New Delhi on 27 October 2023. The agenda of the meeting was to discuss the MoP notification specifying minimum non-fossil fuel consumption requirements for designated consumers applicable to electricity distribution licensees, open access consumers, and captive users regarding their non-fossil energy consumption and its impact on the existing Renewable Purchase Obligation (RPO) framework.

CEA Chairperson explained the rationale for issuing the notification under the Energy Conservation Act 2001 rather than the Electricity Act 2003, citing stronger mandate provisions and penalty mechanisms under Section 26(3) of EC Act 2001. These non-fossil fuel obligations will take effect from FY 2024-25. The WG decided to have more structured and detailed discussions on implications of non-fossil fuel obligations on prevalent RPO framework during the next working group meeting.

2.2. Third Meeting of the Working Group

The third meeting of the WG was held in Mangalore, Karnataka on 4 and 5 January 2024. The agenda of the meeting was to discuss issues involving RPO and Non-fossil Fuel Consumption Obligation (NFFO/RCO) frameworks.

The consultant presented comparative analysis covering:

- RPO framework under Section 86(1)(e) of Electricity Act 2003 (per MoP notifications dated July 22 and September 19, 2022) versus NFFO/RCO framework under Section 14 of Energy Conservation Act 2001/2022 (notified October 20, 2023).
- Comparison parameters included applicable acts, control periods, nodal agencies, obligated entities, target categories, SERC roles, enforcement mechanisms, monitoring, reporting, and penalty provisions.
- Impact assessment on RE procurement quantum for designated consumers and MSEDCL as a sample case for FY 2024-25.

WG Key Deliberations and Conclusions:

- **Co-existence of frameworks:** After detailed examination of Section 86(1)(e) of EA 2003 and Section 14 of EC Act 2001, the Working Group concluded that both RPO and RCO provisions can co-exist without conflict. States can set RPO targets while considering MoP's RCO trajectory for designated consumers including distribution licensees.
- **Technology-specific flexibility:** Since renewable energy potential varies significantly across States for different technologies (wind, hydro, DER, etc.), SERCs should be allowed to set State-specific technology-wise RPO targets that factor in MoP's RCO targets, thereby avoiding duplication or duality in target setting.
- **Enforcement and monitoring:** Compliance monitoring, reporting, and enforcement will follow respective provisions under each Act. No implementation conflicts are expected if both Acts are interpreted congruently, recognizing their different intents and purposes.

2.3. Fourth Meeting of the Working Group

The fourth FOR Working Group meeting was held on 19 February 2024 in New Delhi. The agenda of the meeting was to follow up the WG recommendation on RPO and Non-fossil fuel consumption obligation.

The Consultant presented:

- Comparative analysis of RPO and Minimum Non-Fossil Fuel Consumption targets notified by MoP, highlighting key differences in eligible consumer categories and RE technologies.
- Comparative analysis of MoP's RPO target trajectory versus trajectories set by Electricity

Regulatory Commissions in hilly and non-RE rich States.

The WG noted that while the Non-Fossil Fuel Consumption notification specifies obligations for wind, hydro, DER, and other technologies, renewable energy potential varies significantly across States. Therefore, SERCs should be permitted to set State-specific technology-wise RPO targets that factor in MoP's RCO targets for designated consumers, avoiding duplication in target setting.

The WG decided to undertake a detailed study to establish RPO trajectory norms for States based on market realities and State-specific issues along with finalization of terms of reference (ToR) for the study.

2.4. Fifth Meeting of the Working Group

The fifth FOR Working Group meeting was held on 04 April 2024 in New Delhi. The agenda of the meeting was to provide status update on RPO study for the States.

The Consultant informed the WG about its decision to conduct a detailed study on RPO trajectory norms for non-RE rich States, addressing market realities and State-specific issues. The terms of reference and twelve States from five regions were also finalized for the study. The modular approach proposed for the study includes Preliminary analysis, Identification of implementation and operational challenges, Examination and recommendation of RPO trajectory and suggested regulatory interventions. The consultant outlined major deliverables and submission timelines.

The consultant explained proposed methodology for conducting cost benefit analysis, expected outcomes of the exercise, Data and information requirements, selection criteria for States and six States recommended for detailed cost benefit analysis.

The WG deliberated on the State shortlisting criteria proposed and provided their consent to consider following six States for the detailed cost benefit analysis, representing diverse RE profiles:

- Gujarat/ Andhra Pradesh (RE rich)
- Himachal Pradesh (Hydro availability but no wind/ solar potential)
- Meghalaya/ Assam (Hydro & Solar but no wind),
- Delhi (Metro city with higher power requirement but RE capacity is not available)
- UP/ Bihar (Highest energy requirement of UP but only solar and biomass potential available and some capacity of hydro)

- Chhattisgarh/ Odisha

The consultant presented templates prepared for collecting data and information from selected States and requested WG support for coordination with State Nodal Agencies.

The WG decided that the consultant will share the templates prepared for the collection of data and information from the selected States.

2.5. Eighth Meeting of the Working Group

The eighth FOR Working Group meeting was held on 09 August 2024 in New Delhi. The agenda of the meeting is Development of RPO Compliance Monitoring Mechanism for Renewable Consumption Obligations (RCO). The Secretary, BEE presented on the Development of RPO Compliance Monitoring Mechanism for Renewable Consumption Obligations (RCO). WG inquired about the provision of fungibility under RCO notification and penalty provision for non-compliance of RCO.

The WG highlighted that harmonization of RPO and RCO targets across the States in India is important considering variable mix of RE between RE rich and non-RE rich States. To address this, the WG is conducting a study for harmonization of RPO/ RCO targets based on source wise RE potential available in States.

2.6. Tenth Meeting of the Working Group

The tenth Working Group meeting was held on 17 January 2025 in New Delhi. The agenda of the meeting was to discuss the study undertaken for RPO/RCO analysis.

The Consultant presented findings on “RPO/ RCO Trajectory and Impact Assessment for Select States” covering study background, terms of reference, overall approach and methodology and key observations/recommendations. The three major activities conducted were (a) Activity I: Analysis of RPO/RCO target scenario at national level and State level; (b) Activity II: Analysis of State wise additional RE capacity required to meet RPO target for select 12 States; (c) Activity III: Analysis of financial impact on Average Power Purchase Cost (APPC) due to RPO trajectory.

The WG deliberated on key analysis focusing on need of differential RCO/RPO trajectories for States, impact analysis scenarios, including uniform and State-specific RPO trajectories and the feasibility of grouping States for RPO targets.

WG recommendations:

- Conduct a critical review of assumptions used in impact analysis and update the scenarios.
- Propose State wise RPO/RCO trajectories considering differential approach to achieve overall target of 43.33% in FY 2029-30.
- Updated analysis to be discussed with Chief (RA) and share with the WG members.
- Present study outcomes and key recommendations to FOR during the upcoming special meeting scheduled for the month of February 2025.

2.7. Twelfth Meeting of the Working Group

The twelfth FOR Working Group meeting was held on 19 September 2025 in New Delhi. The agenda of the meeting was to provide status update on the study for RPO/RCO and key findings.

The consultant presented updated analysis on “RPO/ RCO Trajectory and Impact Assessment for Select States” covering State-wise RPO targets notified by SERCs up to August 2025, Source-wise RE capacity addition up to FY 2024-25 and Updated resource adequacy plans and RPO achievement data for 12 selected States.

The key findings observed were:

- Most States have aligned RPO targets with MoP's RCO targets (October 2023 notification).
- National level RCO achievement for FY 2024-25 fell short due to lower-than-projected RE capacity additions and reduced CUFs.
- RE capacity deployment rates over the past 3-7 years have been lower than projected, particularly for wind and hydro.
- Uniform RPO/RCO targets across non-RE rich States are challenging; a differential approach based on State-specific RE potential is necessary.

The WG discussed:

- Importance of considering State-wise RE contracted capacity by DISCOMs, not just installed capacity.
- Challenges in meeting RCO targets for FY 2025-26 through FY 2027-28 based on current 3-year CAGR trends.
- Need for differential State-wise RCO trajectories to achieve the 43.33% national target by FY 2029-

30 while addressing near-term challenges and penalty provisions.

The Proposed Differential Approach by WG recommended categorizing States with year-on-year (Y-o-Y) RCO target increases as follows:

- RE rich and RPO overachieving States: 1-2% Y-o-Y increase
- Average RE potential and RPO achieving States: 2-3% Y-o-Y increase
- Non-RE rich and RPO non-achieving States: 3-4% Y-o-Y increase

The Financial impact assessment shows that setting RCO targets based on source-wise RE potential reduces APPC. The MoP draft revised RCO notification (August 5, 2025) was reviewed, including applicability illustrations. WG reiterated that RPO/RCO should apply to all obligated entities based on ex-bus energy requirements.

The WG recommended action points:

- Propose State wise RPO/RCO trajectories using differential approach to achieve 43.33% national target by FY 2029-30.
- Prepare and submit draft report to FOR Secretariat.

2.8. Thirteenth Meeting of the Working Group

The thirteenth meeting of the FOR Working Group (WG) on "RE Related Policy and Regulatory Matters" was held on October 31, 2025, at New Delhi. Based on the comments and suggestions of RE WG members in 12th WG meeting, the consultant has updated the analysis and proposed State wise trajectory with differential approach. After detailed deliberations, it was agreed to adopt an incremental percentage approach for State grouping, as follows:

- Group A: 2.5% YoY incremental RCO w.r.t. current achievement in FY25 as per RA plans
- Group B: 3.5% YoY incremental RCO w.r.t. current achievement in FY25 as per RA plans
- Group C: 4.5% YoY incremental RCO w.r.t. current achievement in FY25 as per RA plans

The Working Group accepted the draft report subject to above changes and suggested submitting the revised report to the FOR WG for consideration as agenda in the subsequent meeting of the FOR.

2.9. 98th Meeting of the Forum of Regulators

The report was deliberated in 98th Meeting of the Forum of Regulators (FOR) held on 7th November,

2025 in which the report was endorsed with following recommendations:

- States already achieving the RCO trajectory of 45% and above should be categorised as ‘special-category States’ within Group A.
- The study also recommended a national-level RPO/RCO trajectory for FY 2025–26 to FY 2029–30, with the overall target for FY 2029– 30 set at 43%, aligned with the RCO trajectory specified by the Ministry of Power.
- RPO under section 86(1)(e) is to be aligned with RCO of MoP overall target of 2030.
- Year-to-Year targets for 2025-30: In the First couple of years, targets are not matching and enhancing. Hence, a one-size-fits-all trajectory might not be desirable or achievable. A common but differentiated approach, as suggested in the study report, should be adopted.
- An advisory, along with the endorsed RPO Study report, be sent to the Ministry of Power

The Consultant assisting the FOR WG on RE Policy has updated the report in light of the above recommendations.

3. Background of RPO/ RCO Study

The objective of this study is to examine RPO/ RCO trajectory specified by Ministry of Power (MoP) for non-RE rich States and explore innovative mechanisms and regulatory interventions to achieve national level RPO/ RCO trajectory by FY 2029-30.

3.1. Scope of Work

The scope of work defined to conduct the RPO/RCO study is given below:

6) To undertake comparative analysis of RPO trajectory under unified RPO target notification vis à vis SERC RPO Regulations. The scope defined were the twelve States from all five regions of India were considered under the study which includes following:

Region	States
North Region	Uttar Pradesh, Delhi, Himachal Pradesh, Punjab
Western Region	Chhattisgarh, Gujarat
Eastern Region	Bihar, Odisha
Northeastern Region	Assam, Meghalaya
Southern Region	Andhra Pradesh, Kerala

Table 2 States selected for RPO analysis

(Source- Based upon the discussions of FOR)

7) To identify implementation & operational challenges including cost benefit analysis to implement unified RPO trajectory, from State perspective

8) To examine and recommend RPO trajectory for States with different levels of RE penetration

9) To explore feasibility of fungibility of RPO in the context of growth of various RE technologies

10) To explore innovative mechanisms and regulatory interventions to implement the RPO trajectories for States

11) Any other related matters

3.2. Approach and Methodology

Modular approach has been developed to conduct the study. The module wise approach under four modules is as follows:

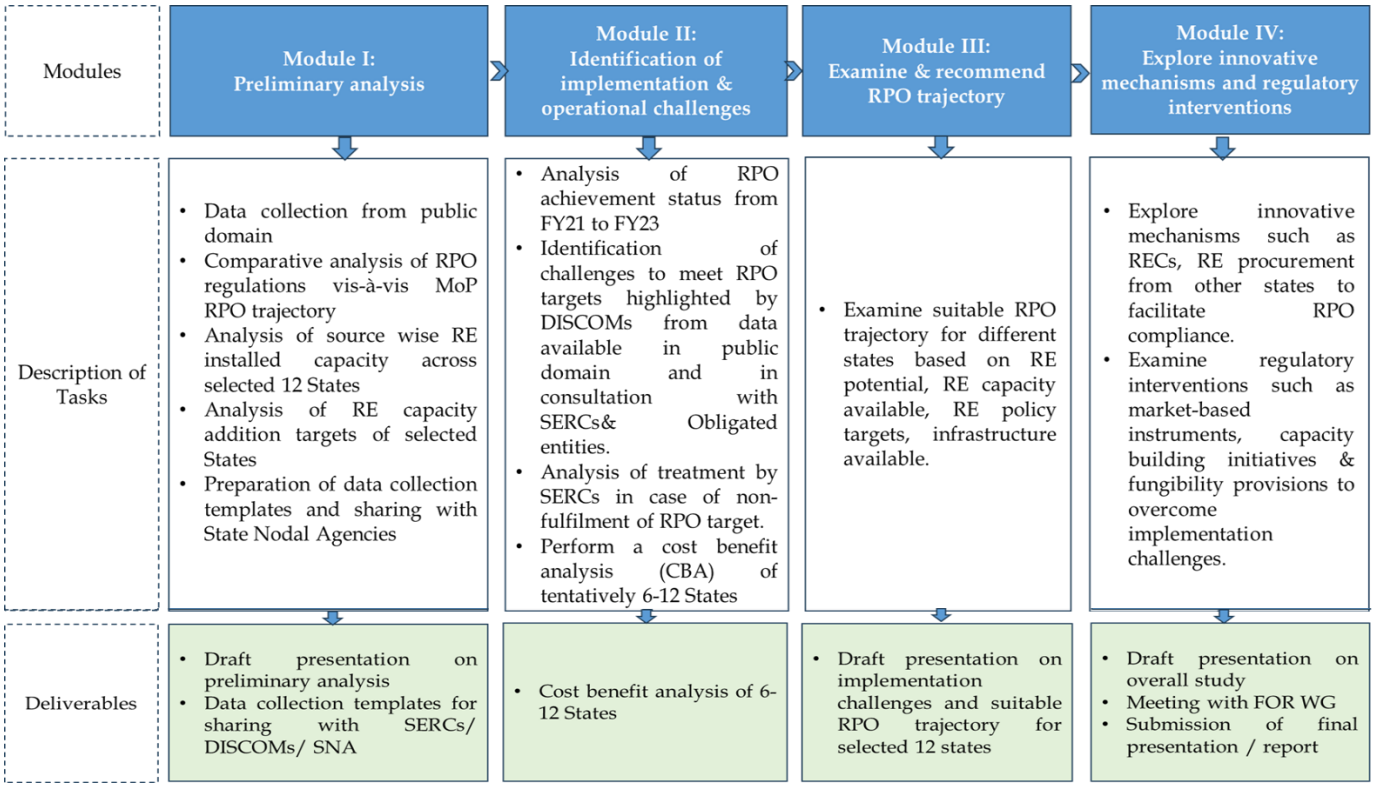


Figure 2 Approach and Methodology

3.3. Data requirement and data collection status

For conducting the overall study on impact assessment of RPO/RCO on States and preliminary analysis the following required data is collected from public domain.

Data Requirement	Source	Availability Status	Remarks
State wise RPO targets and RPO achievement in the past	Tariff Order, MYT Order (SERCs)	Available	Data from public domain
State wise RE installed capacity	CEA Annual Installed Capacity Reports and RE Installed Capacity reports as per MNRE	Available	Data from public domain
RE potential available in States	ICED (NITI Aayog) and Akshay Urja Portal (MNRE)	Available	Data from public domain

Data Requirement	Source	Availability Status	Remarks
State-wise PLF/CUF of RE technologies	CEA States Resource Adequacy Reports, Tariff Orders	Available	Data from public domain
State wise ex-bus energy requirement (MU) projections	20th EPS Report by CEA	Available	Data from public domain
RE capacity addition plan States as per State wise Resource Adequacy Plans	CEA Resource Adequacy Reports	Available	Data from public domain
Source-wise Power purchase cost in States	Tariff Order, MYT Order (SERCs)	Available	Data from public domain

Table 3 Data requirement and data collection from public domain

(Source- Based upon the requirement of the consultant for carrying out the analysis for the study)

FOR RE WG authorized the consultant to collect the data from 12 selected States. Accordingly, the consultant has prepared and shared data collection template with the SERCs of respective 12 States. The status of data collection from States is as follows:

Data/Information requested from States/SERCs	Status of data received from States
RPO achievement status of obligated entities from FY 2020-21 to FY 2022-23	Data received from Assam and Bihar
Projections of ex bus power purchase requirement of States and average power purchase cost from FY 25 to FY 30	Data received from Assam
Tied up capacity of renewable energy sources with DISCOMs/ State	Data received from Assam
Installed capacity of renewable energy plants in State	Data received from Assam (only solar), Himachal Pradesh (Only Large and small hydro) and Bihar
Renewable Energy Capacity addition plans of States	Data received from Assam and Himachal (for hydro)
List of operational and implementation challenges to meet RPO for obligated entities	Data received from Assam

Table 4 Data requirement and data collection status from 12 selected States

(Source- Based upon the data requested by Idam Infra and data received from States)

The data Stated above were received from the States of Assam, Bihar and Himachal Pradesh although the request was made to all twelve States. Due to non-availability of data from other States, analysis is carried out based on data collected from public domain.

4. Policy and Regulatory Developments on RPO/RCO at National Level

The RPO targets were introduced under the Electricity Act 2003 with the objective of promoting Renewable Energy (RE) generation & consumption in the country. Section 86(1)(e) of Electricity Act, 2003 mandates State Electricity Regulatory Commissions (SERCs) to specify a minimum share of power procurement from RE sources for their State. This target is termed as Renewable Purchase Obligation (RPO). RPO is mandated as the most important policy and regulatory tool for RE promotion in the country. To provide States with a uniform benchmark or reference point the Ministry of Power (MoP) has periodically issued national RPO trajectories, which are largely adopted by SERCs while defining their respective State-wise RPO targets.

4.1. Chronology of recent RPO developments at national level

Considering India's goal of achieving 500 GW RE capacity addition target by 2030, MoP has come up with RPO notification in July 2022 and its amendment in September 2022 under Electricity Act 2003. Under this notification, MoP has set category wise RPO targets w.r.t. Wind, Hydro, Energy Storage and Other RE from FY 2022-23 to FY 2029-30. In October 2023, MoP published Non fossil fuel/ Renewable Consumption Obligations (RCO) to mandate designated consumers incl. DISCOMs, Open Access and Captive users to procure specified share of electricity from RE sources under Energy Conservation Act 2001. MoP has further published draft amendment of RCO notification in August 2025 and revised RCO notification in September 2025. The chronology of events on recent RPO/ RCO developments is given in figure 2 below:

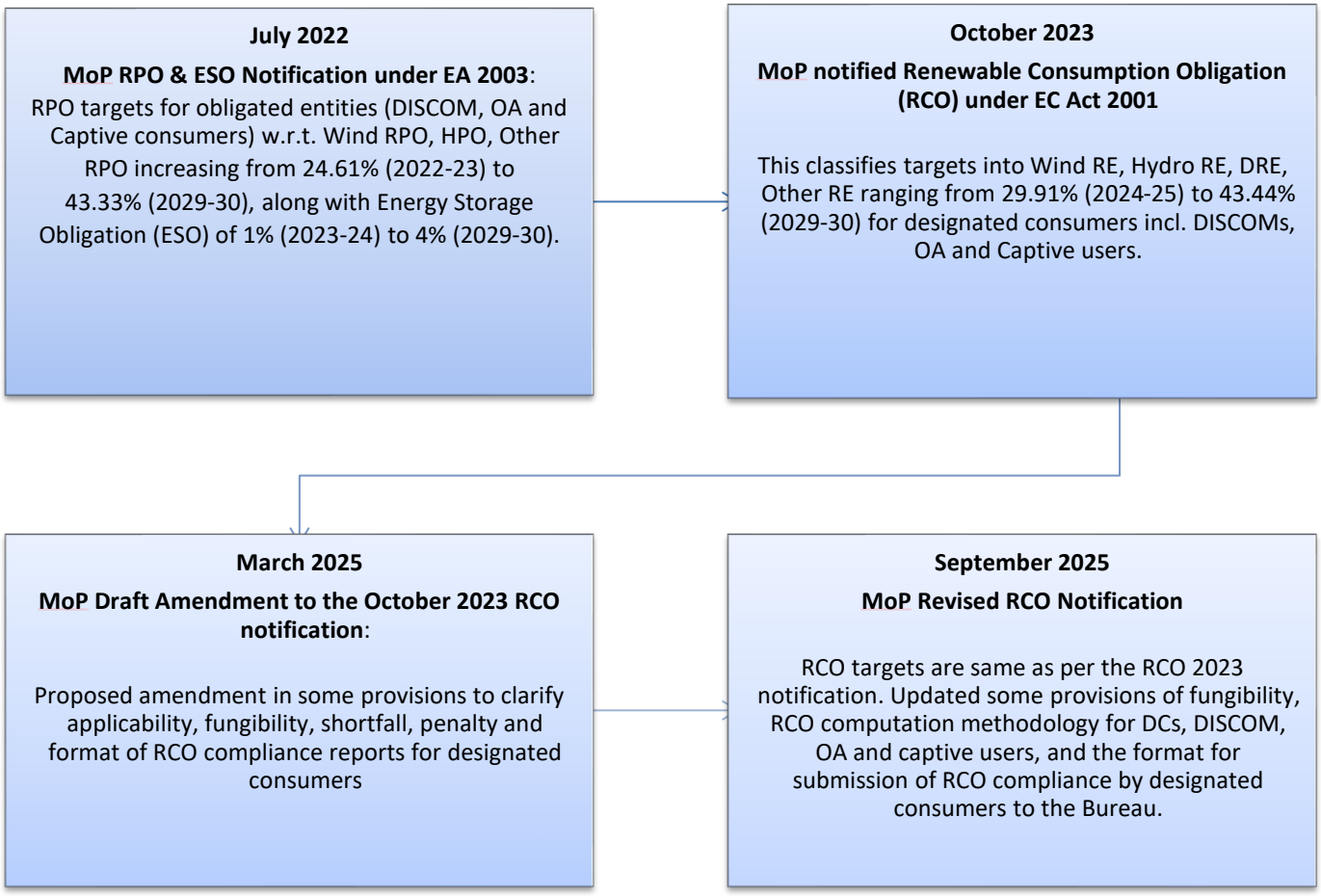


Figure 3 Chronology of RPO/ RCO developments at national level

(Source- Chronology developed based on notifications issued by MoP on RPO/RCO from July 2022 to September 2025)

4.2. Salient features of MoP RPO Notification 2022

The MoP issued a notification on RPO and Energy Storage Obligation (ESO) trajectory in July 2022 along with a corrigendum on September 2022 under the EA 2003. The RPO targets were classified into Wind, HPO, Other RPO with targets of 24.61% in FY 2022-23 to 43.33% in FY 2029-30, with ESO of 1% in FY 2023-24 to 4% in FY 2029-30. Category wise RPO targets are as below:

Year	Wind RPO	HPO	Other RPO	Total RPO	ESO
2022-23	0.81%	0.35%	23.44%	**24.61%**	-
2023-24	1.60%	0.66%	24.81%	**27.08%**	1.0%
2024-25	2.46%	1.08%	26.37%	**29.91%**	1.5%
2025-26	3.36%	1.48%	28.17%	**33.01%**	2.0%
2026-27	4.29%	1.80%	29.86%	**35.95%**	2.5%
2027-28	5.23%	2.15%	31.43%	**38.81%**	3.0%
2028-29	6.16%	2.51%	32.69%	**41.36%**	3.5%
2029-30	6.94%	2.82%	33.57%	**43.33%**	4.0%

Table 1 RPO as per MoP Notification on 22 July 2022 & Corrigendum on 19 September 2022

(Source- MoP RPO notifications dated 22 July 2022 & Corrigendum on 19 September 2022)

The salient features of the RPO July 2022 notification are summarized below:

Sr. No.	Particular	Key Provisions
1.	**Notification Date**	MoP Notification on 22 July 2022[1] & Corrigendum on 19 September 2022[2]
2.	**Title**	Renewable Purchase Obligation (RPO) and Energy Storage Obligation trajectory till 2029-30
3.	**Effective Period**	FY 2022-23 to FY 2029-30
4.	**Issuance under**	**Electricity Act, 2003 Section 86 (Functions of State Commission): ---** (1) The State Commission shall discharge the following functions, namely:- (e) promote co-generation and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a

[1] https://powermin.gov.in/sites/default/files/Renewable_Purchase_Obligation_and_Energy_Storage_Obligation_Trajectory_till_2029_30.pdf

[2] https://powermin.gov.in/sites/default/files/Corrigendum_to_Renewable_Purchase_Obligation_and_Energy_Storage_Obligation_Trajectory_till_2029-30_2022.pdf

		distribution licensee;
5.	**Nodal Agency**	POSOCO
6.	**Obligated Entities**	Distribution Licensees, Open Access Consumers and Captive Users
7.	**RPO Targets categories**	Wind RPO, HPO, Other RPO and ESO
8.	**Role of SERCs**	Under EA 2003, all the functions are given of framing the regulations to SERCs
9.	**Fungibility Provision**	• WPO shall be met from WPPs commissioned after 31 March 2022 and Wind Energy consumed over & above 7% from WPPs commissioned till 31 March 2022 to be considered. • In case of hydro, HPPs (including PSPs and SHPs) commissioned after 8 March 2019 to be considered for HPO. • For other RPO, any RE project not mentioned in Wind RPO & HPO sources to be considered.
10.	**Enforcement, monitoring & reporting**	POSOCO shall maintain the data related to compliance with RPO. SERCs shall come up with RPO targets in each control period and SLDCs/ SDAs operate as nodal agency to monitor RPO compliance of obligated entities at State level.
10.	**Penalty**	As decided by SERCs

Table 2 Summary of MoP RPO Notification 2022

(Source- Consultant analysis from MoP RPO notifications dated 22 July 2022 & Corrigendum on 19 September 2022)

4.3. Salient features of MoP RCO Notification 2023

The Minimum Share of Electrical Energy Consumption from Non-Fossil Fuel (RE) Sources/ Renewable Consumption Obligations (RCO) targets were defined by MoP in October 2023 issued under section 14 of the Energy Conservation (EC) Act, 2001.

RCO targets increase from 29.91% in FY 2024-25 up to 43.33% in FY 2029-30 across different categories viz., wind RE, hydro RE, other RE and distributed RE (DRE) which is the new category addition in the RCO target notification.

Year	Wind RE	Hydro RE	Distributed RE*	Other RE	Total RPO
2024-25	0.67%	0.38%	1.50%	27.35%	**29.91%**
2025-26	1.45%	1.22%	2.10%	28.24%	**33.01%**
2026-27	1.97%	1.34%	2.70%	29.94%	**35.95%**

Year	Wind RE	Hydro RE	Distributed RE*	Other RE	Total RPO
2027-28	2.45%	1.42%	3.30%	31.64%	**38.81%**
2028-29	2.95%	1.42%	3.90%	33.10%	**41.36%**
2029-30	3.48%	1.33%	4.50%	34.02%	**43.33%**

Table 3 MoP Revised RCO Notification dated 20 October 2023

(Source- Revised MoP RCO notification dated 20 October 2023)

In case of hilly and North-East States/Union territories namely Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Himachal Pradesh, Uttarakhand, Union Territory of Jammu & Kashmir and Ladakh, the DRE component to be half of that specified in the table above and the remaining half is added into Other RE component making the total target same.

The salient features of the RCO October 2023 notification are summarized below:

Sr. No.	Particular	Key Provisions
1.	**Notification Date**	MoP Notification on 20 October 2023[3]
2.	**Title**	Minimum Share of Consumption of Non-fossil Fuel Sources (RE) by designated consumers as energy or feedstock
3.	**Effective Period**	FY 2024-25 to FY 2029-30
4.	**Issuance under**	**Energy Conservation Act, 2001:** In exercise of the powers conferred by clauses (n) and (x) of section 14 of the Energy Conservation Act, 2001 (52 of 2001), the Central Government in consultation with the Bureau of Energy Efficiency, hereby specifies the minimum share of consumption of non-fossil sources (renewable energy) by designated consumers as energy or feedstock and different share of consumption for different types of non-fossil sources for different designated consumers in respect of electricity distribution licensee and other designated consumers who are open access consumers or captive users to the extent of consumption of electricity from sources other than distribution licensee **as a percentage of their total share of energy consumption.** (Section 14 of EC Act: Power of Central Government to enforce efficient use of energy and its conservation)
5.	**Nodal Agency**	Bureau of Energy Efficiency (BEE)
6.	**Obligated Entities/ Designated Consumers**	Designated Consumers and other Designated Consumers who are captive or open access consumers.

[3] https://powermin.gov.in/sites/default/files/Notification_Regarding_Renewable_Purchase_Obligation_RPO.pdf

Sr. No.	Particular	Key Provisions
7.	**RPO Targets categories**	Wind RE, Hydro RE, Distributed RE and Other RE
8.	**Fungibility**	Wind RE: To be met from WPPs commissioned after March 31, 2024. Hydro RE: To be met from HPPs (including PSP & SHP) commissioned after March 31, 2024. Distributed RE: To be met from projects less than 10 MW. Other RE: To be met from any RE project not specified in Wind RE, Hydro RE & DRE component. Fungibility is allowed for wind, hydro, and other RE such that shortfalls can be met by surpluses from other.
9.	**Role of SERCs**	Under EC (Amendment) Act 2022, SERCs shall make regulations for discharging the functions given in the EC act. *(Section 27(A) on Power of State Commission to make regulations newly inserted)*
10.	**Enforcement, monitoring & reporting**	BEE shall maintain data related to compliance of renewable energy utilization by the designated consumer(s) and submit report to the Central Government. (Clause 7 of MoP Notification) Central Govt. in consultation with BEE directs every designated consumer to comply with energy consumption norms and standards; *(Section 14 of EC Act)* State govt. designates any agency as designated agency to coordinate, regulate & enforce provisions of EC Act within the State. *(Section 15 (d) of EC Act 2001)*
11.	**Penalty**	Shortfall in specified RE targets leads to non-compliance and incurs penalties as per section 26(3) of the EC Act Amendment, 2022 As per EC Act 2001 Section 26 (3), maximum penalty of INR 10 lakhs for each failure will be applicable. Additional penalty shall not exceed twice the price of every MToE prescribed under this Act, which is more than the prescribed norms.

Table 4 Summary of MoP RCO Notification 2023

(Source- Consultant analysis from MoP RCO notifications dated 20 October 2023)

4.4. Salient features of MoP RCO Notification 2025

The revised draft Renewable Consumption Obligations (RCO) targets were issued by MoP in August 2025 and the revised RCO notification in September 2025 issued under section 14 of the Energy Conservation (EC) Act, 2001.

Year	Wind RE	Hydro RE	Distributed RE*	Other RE	Total RPO
2024-25	0.67%	0.38%	1.50%	27.35%	**29.91%**
2025-26	1.45%	1.22%	2.10%	28.24%	**33.01%**
2026-27	1.97%	1.34%	2.70%	29.94%	**35.95%**
2027-28	2.45%	1.42%	3.30%	31.64%	**38.81%**
2028-29	2.95%	1.42%	3.90%	33.10%	**41.36%**
2029-30	3.48%	1.33%	4.50%	34.02%	**43.33%**

Table 5 MoP Revised RCO Notification dated 05 August 2025 & 27 September 2025

(Source- Revised MoP RCO notification dated 05 August 2025 & 27 September 2025)

In case of hilly and North-East States/Union territories namely Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Himachal Pradesh, Uttarakhand, Union Territory of Jammu & Kashmir and Ladakh the DRE* component to be half of that specified in the table above and the remaining half is added into Other RE component making the total target same.

The salient features of the Draft RCO August 2025 notification are summarized below:

Sr. No.	Particular	Revised Draft MoP RCO Notification (Aug 25)
1.	**Notification Date**	MoP Notification on 05 August 2025[4]
2.	**Title**	Revised Draft MoP Renewable Consumption Obligation
3.	**Effective Period**	FY 2024-25 to FY 2029-30
4.	**Issuance under**	**Energy Conservation Act, 2001:** In exercise of the powers conferred by section 14 of the Energy Conservation Act, 2001 the Central Government in consultation with the Bureau of Energy Efficiency, hereby specifies the minimum share of consumption of electrical energy consumption from renewable energy sources for designated consumers who are distribution licensee, open access consumers and captive users For open access consumers and captive users, this requirement **applies to electricity consumption from sources other than distribution licensee.**
5.	**Nodal Agency**	Bureau of Energy Efficiency (BEE)
6.	**Obligated Entities/**	Designated Consumers (DC) such as Open Access, Captive users and

[4] https://beeindia.gov.in/sites/default/files/Revised%20draft%20notification%20on%20RCO%20under%20EC%20Act%20(3).pdf

Sr. No.	Particular	Revised Draft MoP RCO Notification (Aug 25)
	Designated Consumers	Distribution licensees.
7.	**RPO Targets categories**	Wind RE, Hydro RE, Distributed RE and Other RE
8.	**Role of SERCs**	Under EC (Amendment) Act 2022, SERCs shall make regulations for discharging the functions given in the EC act. (Section 27(A) on Power of State Commission to make regulations newly inserted)
9.	**Enforcement, monitoring & reporting**	**Compliance Monitoring:** To be done by BEE and submit periodic reports to central government. Designated Consumers to provide report to BEE duly certified by energy auditor or SLDC.
10.	**Penalty**	**Non-compliance:** Any shortfall to be treated as non-compliance and penalty levied as per Section 26 (3) of the EC Act. **Suo-moto Proceeding:** Allowed by adjudicating officer by imposing penalty under section 26 and 27 of the Act.
11.	**Obligation from Wind / Hydro**	To be met from Wind/Hydro commissioned after 31st March 2024.
12.	**Obligation under DRE**	To be met by RE projects less than 10 MW size and to include all types of solar installations i.e. net-metering, gross-metering, virtual net metering, group net metering, behind the meter etc.
13.	**Obligation under Other RE**	It can be from wind, hydro including free power commissioned before 1st April 2024 & co-firing of biomass & municipal solid waste (MSW).
14.	**Fungibility**	Allowed for wind, hydro, and other RE such that shortfalls can be met by surpluses from other, but DRE is non-fungible for shortfall, but surplus can be used to offset other components.
15.	**Options to fulfill RCO Obligation**	Direct RE Consumption or through energy storage system. Purchase of RECs issued by CERC including RECs acquired under Virtual Power Purchase Agreements (VPPAs). Payment of buyout price by CERC
16.	**Central Energy Conservation Fund**	For receiving the amount from buyout mechanism from which 50% of the amount to be transferred to respective State Energy Conservation Fund to be used by States for development of specified RE sources and storage capacities.

Table 6 Summary of Revised Draft MoP RCO Notification 2025

(Source- Consultant analysis from Revised Draft MoP RCO notifications dated 05 August 2025)

RCO computation at different levels for different types of consumers:

Consumers	Description
Designated Consumers	RCO to exclude power consumption from nuclear power sources.

(DC)	
Open Access & Captive users	To meet RCO from any RE sources.
Open Access Consumers	RCO to be computed for electrical energy consumption at the point of injection from grid to consumer network.
Captive users	RCO to be computed for electricity generated and self-consumption excluding auxiliary consumption. (exclude any generation from waste energy recovery and exclude 50% electricity generated/self-consumption from co-gen plants)
Distribution licensees	RCO to be calculated based on electrical energy supplied to consumers within its periphery. (exclude consumption from open access from sources other than distribution licensee and electricity generated/self-consumption by captive users).

Table 7 RCO computation for different types of consumers

(Source- Consultant analysis from Revised Draft MoP RCO notifications dated 05 August 2025)

The salient features of the revised RCO notification dated September 2025 are summarized below:

Sr. No.	Particular	Key provisions
1.	**Notification Date**	MoP Notification on 27 September 2025[5]
2.	**Title**	Revised MoP Renewable Consumption Obligation (RCO)
3.	**Effective Period**	FY 2024-25 to FY 2029-30
4.	**Issuance under**	**Energy Conservation Act, 2001:** In exercise of the powers conferred by section 14 of the Energy Conservation Act, 2001 the Central Government in consultation with the Bureau of Energy Efficiency, hereby specifies the minimum share of electrical energy consumption from renewable energy sources for designated consumers who are distribution licensee, open access consumers and captive users For open access consumers and captive users, this requirement applies to electricity consumption from sources other than distribution licensee.
5.	**Nodal Agency**	Bureau of Energy Efficiency (BEE)
6.	**Obligated Entities/ Designated Consumers**	Designated Consumers (DC) such as Open Access, Captive users and Distribution licensees.
7.	**RPO Targets categories**	Wind RE, Hydro RE, Distributed RE and Other RE

[5] https://powermin.gov.in/sites/default/files/Revised_RCO_Gazzette_Notification_dated_27th_September_2025.pdf

Sr. No.	Particular	Key provisions
8.	**Role of SERCs**	Under EC (Amendment) Act 2022, SERCs shall make regulations for discharging the functions given in the EC act. (Section 27(A) on Power of State Commission to make regulations newly inserted)
9.	**Enforcement, monitoring & reporting**	To be done by BEE and submit periodic reports to central government. Designated Consumers to provide report to BEE duly certified by energy auditor or SLDC.
10.	**Penalty**	Any shortfall to be treated as non-compliance and penalty levied as per Section 26 (3) of the EC Act.
11.	**Obligation from Wind / Hydro**	To be met from Wind/ Hydro commissioned after 31st March 2024.
12.	**Obligation under DRE**	To be met by RE projects less than 10 MW size and to include all type of solar installations i.e. net-metering, gross-metering, virtual net metering, group net metering, behind the meter etc.
13.	**Obligation under Other RE**	It can be from wind, hydro including free power commissioned before 1st April 2024 & co-firing of biomass & municipal solid waste (MSW).
14.	**Fungibility**	Allowed for wind, hydro, and other RE such that shortfalls can be met by surpluses from other, but DRE is non-fungible for shortfall but surplus can be used to offset other components.
15.	**Options to fulfill RCO Obligation**	Direct RE Consumption or through energy storage system. Purchase of RECs issued by CERC including RECs acquired under Virtual Power Purchase Agreements (VPPAs). Payment of buyout price by CERC
16.	**Central Energy Conservation Fund**	For receiving the amount from buyout mechanisms from which 75% of the amount to be transferred to respective State Energy Conservation Fund to be used by States for development of specified RE sources and storage capacities.
17.	**RCO compliance from multiple designated consumers under common control**	As defined in Companies Act, 2013 to be considered on an aggregate basis at the holding company level.

Table 8 Summary of Revised MoP RCO Notification 2025

(Source- Consultant analysis from Revised MoP RCO notifications dated 27 September 2025)

RCO computation at different levels for different types of consumers:

Consumers	Description
Designated Consumers (DC)	RCO to exclude electricity consumption from nuclear power sources.
Open Access & Captive users	To meet RCO from any RE sources.
Open Access Consumers	RCO to be computed from electrical energy consumption at the point of drawal from the grid.
Captive users	RCO to be computed from electricity generated and self-consumption excluding auxiliary consumption. (exclude any generation from waste energy recovery and exclude 50% electricity generated/self-consumption from co-gen plants, 50% of the fossil fuel-based electricity consumed in Aluminum smelters).
Distribution licensees	RCO to be calculated based on electrical energy supplied to consumer within its periphery. (exclude consumption from open access from sources other than distribution licensee and electricity generated/self-consumption by captive users).

Table 9 RCO computation for different types of consumers

(Source- Consultant analysis from Revised MoP RCO notifications dated 27 September 2025)

4.5. Important observations from MoP RPO and RCO notifications

From the national and State level developments w.r.t. RPO/ RCO from 2022 to present, there are some important issues/ key observations. These issues/ observations need to be considered to develop robust RPO/ RCO framework at national level to achieve the target of 500 GW and mandate obligated entities/ designated consumers to procure RE to fulfil RPO/ RCO targets. The observations are as follows:

Observation	Description
Uniform RPO/RCO targets set by MoP	Although the States adopt uniform RPO/ RCO in line with MoP notification, potential of RE sources, transmission network availability, grid reliability conditions vary from State to State based on geographical locations. Hence, meeting uniform RPO targets across all States is difficult to achieve.
Computation of RPO variations in applicability of RPO for different consumers across States	Some States calculate RPO/ RCO targets at ex-bus level or at T<>D periphery or at energy sales level
Multiple notifications from MoP on RPO/RCO	Created difficulty for SERCs to align State wise RPO targets in line with the MoP targets. The recent shift from RPO (under EA 2003) to RCO (under EC Act 2001) notification by MoP mandates SERCs to adapt to the RCO targets. This changing regulatory landscape causes hindrance in the adoption of RPO/RCO for the States.

Observation	Description
	States with RPO targets in line with MoP RPO Notification 2022: Assam, Bihar, Chhattisgarh, Delhi, Himachal Pradesh, Punjab, Haryana, Madhya Pradesh, Tamil Nadu, Manipur, Mizoram, Rajasthan (12 States) **States with RPO targets in line with MoP RCO Notification 2023:** Karnataka, Maharashtra, Gujarat, Meghalaya, Jharkhand, Uttarakhand, Sikkim, Jammu Kashmir, Ladakh, Goa, Andaman & Nicobar Islands, Lakshadweep, Puducherry, Daman & Diu, Dadra & Nagar Haveli, Chandigarh (7 States and 8 UTs) **States with different RPO targets w.r.t. MoP RPO notification 2022 and MoP RCO Notification 2023:** Andhra Pradesh, Kerala, Odisha, Telangana, West Bengal, Nagaland, Tripura, Uttar Pradesh (8 States)
Changing classification of RPO category makes it look non-uniform	Earlier the RPO targets were classified as solar and non-solar, then it got changed to wind RPO, HPO, other RPO and ESO. The recent RCO notification classifies it into wind RE, hydro RE, distributed RE (DRE) and other RE and removes ESO targets from it.
Multiple level of compliance	At the national level, framework governing RPO/RCO will make it difficult for compliance. For RPO the nodal agency was POSOCO under the Electricity Act, 2003 but for RCO, nodal agency will be BEE under the Energy Conservation Act, 2001. At the State level lack of mandatory compliance framework by State Nodal Agencies is often observed as a common issue.
Carry forward allowance provision by SERCs	In some cases of non-compliance or shortfall in meeting RPO targets, SERCs allow carry forward to meet the targets in subsequent years although the State has significant RE capacity available to fulfill the RPO targets.
Penalty provisions	Higher penalty in case of RCO non-compliance under section 26(3) of the EC Act 2001 (Amendment in 2022). Obligated entities will need time to plan for RE procurement w.r.t. RPO/ RCO targets to avoid the penalties. Else, it will result in burden on end consumers.

Table 10 Observations from MoP RPO/RCO notifications

(Source- Consultant analysis from MoP RPO/RCO notifications)

Considering the policy and regulatory developments at national level and possible issues which may arise in upcoming years, detailed study and analysis are carried out in next sections w.r.t following aspects:

1. Possible RPO/ RCO target achievement at National Level by FY 2029-30.
2. Possible State level RPO/ RCO target achievement by FY 2029-30 based on resource adequacy plans of States published by CEA.
3. Financial impact of uniform RPO/ RCO on selected 12 States for the study.

5. Analysis of national level possible RPO/RCO achievement by FY 30

It is necessary to assess whether uniform RPO/RCO trajectory of 43.33% is achievable by FY 2029-30 at all India level based upon the RE capacity addition plan of the country and considering the actual RE capacity addition growth rate of the country. To assess the national level possible RPO/ RCO achievement, a step wise approach is developed to carry out the analysis:

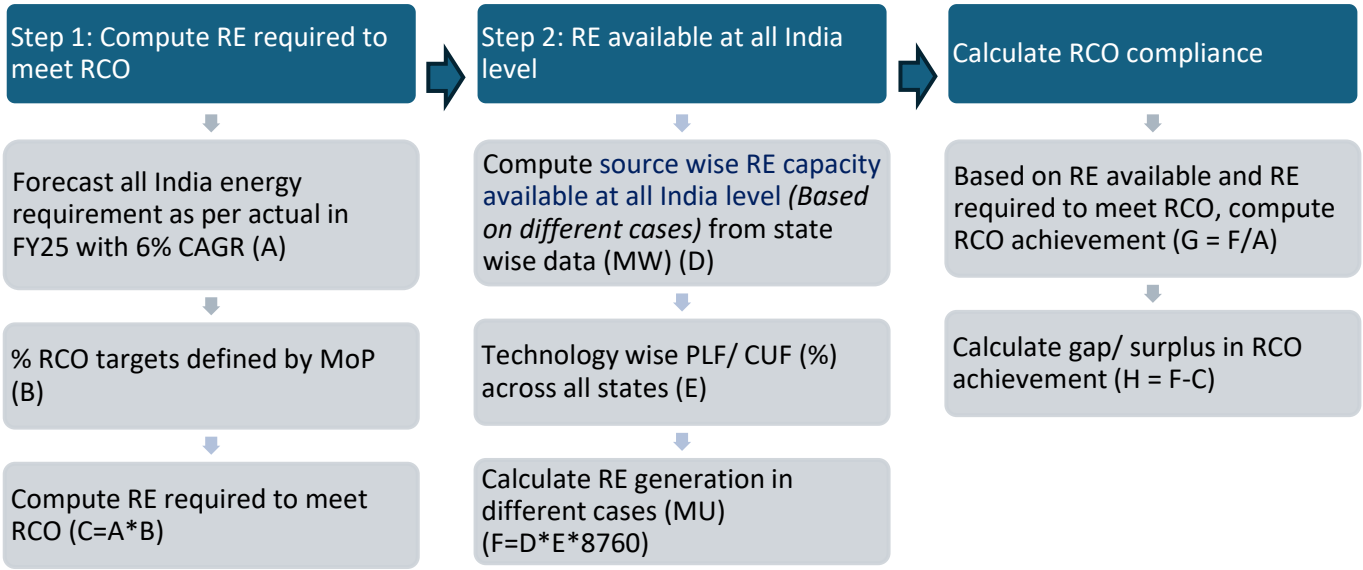


Figure 4 Approach for RPO/RCO compliance and achievement

5.1. Important input parameters and assumptions

The key input parameters considered for the analysis of RPO/RCO achievement at national level are:

- All India ex-bus energy requirement as per 20th EPS (Annexure 2) and actual ex-bus energy requirement in FY2024-25[6].

[6] https://cea.nic.in/wp-content/uploads/ps lf/2023/02/Volume_I_Report_of_20th_Electric_Power_Survey.pdf

- All India demand projection at ex-bus with 6% growth rate based on actual energy requirements in FY 2024-25 (Annexure 3).
- State wise ex-bus energy requirement as per 20th EPS report (Annexure 2)[7].
- Energy required to meet RPO/ RCO targets w.r.t. ex-bus energy requirement at national level and States/UTs level up to FY 2029-30.
- PLF/ CUF of RE technologies based on State wise RA plans[8], SERC Orders and NITI Aayog report on "Renewable Energy Resource Adequacy Planning to meet RPO by the States in India"[9] to estimate RE available in States. (Annexure 4)
- All India hydro installed capacity (MW) up to March 2024 by aggregating the data from States, UTs, and DVC.
- CEA Resource Adequacy (RA) reports State wise DISCOMs for following States: Bihar (BSPHCL), Gujarat (GUVNL), UP (UPPCL), Maharashtra (MSEDCL), and Jharkhand (JBVNL). Resource Adequacy reports are not available on CEA website for States/UTs such as Puducherry, Daman & Diu, Dadra & Nagar Haveli.

The following assumptions are made for analysis at national level:

- 100% DRE targets of all the States as per MoP RPO/ RCO trajectory will be met.
- The projected State-wise RE capacities are aggregated to estimate the overall RE capacity at India level.
- If the projected capacity for any State exceeds its category-wise potential (as per NITI Aayog Dashboards), adjustments are made accordingly.

5.2. Actual RCO achievement in FY25 vis-vis RA plan projections and key observations

Before developing the cases and evaluating possible RPO/ RCO achievement at national level, it is necessary to evaluate actual RPO/ RCO achievement in FY25 as against the target. The RPO/RCO achievement at all-India level is calculated based upon the RE capacity addition considering the actual

[7] https://cea.nic.in/wp-content/uploads/ps___lf/2023/02/Volume_I_Report_of_20th_Electric_Power_Survey.pdf
[8] https://cea.nic.in/generation-resource-adequacy-study-reports/?lang=en
[9] https://www.niti.gov.in/sites/default/files/2024-02/Policy%20Paper_Energy_12022024_V4.pdf

data of FY 25 and the RA plan projections for FY 25.

Particulars	Unit	RA Projections		Actual data of FY25	
		FY 25 (RA plan projection)	Data Source	FY 25 (Actual)	Data Source
All India Energy Requirement (Ex-bus) (A)	MU	16,94,634	20th EPS Report	18,24,220	CEA Generation Report (March 2025)[10]
MoP RCO Targets (%) (B)	%	29.90%	MoP Notification	29.90%	MoP Notification
RE required to meet RPO/ RCO (C=A*B)	MU	5,06,696		5,45,441	
RE Capacity Available (D)	MW	2,50,321	State wise RA Plans	2,20,096	CEA Generation Report (March 2025)
Composite CUF (%) of RE at all India level (E)	%	26%	State wise RA Plans	22.5%	Derived based on avg. IC of FY24 & FY25
RE Available to meet RPO/ RCO (MU) (F=D*PLF (E))	MU	5,67,959		4,33,810	CEA Generation Report (March 2025)
RPO/ RCO Gap (-)/ Surplus (MU) (G=F-C)	MU	67,388		-1,11,631	
% RPO/ RCO Achievement (H=F/A)	%	34%		23.78%	

Table 11 RCO achievement projection Vs actual in FY 25at national level (Computed)

(Source- Consultant analysis)

The following observations are made from the RCO achievement made for FY 25 based upon the actual data and RA projections.

- Actual energy requirement of FY25 is 18,24,220 MU which is significantly higher than 16,94,634 MU the projected energy requirement as per RA plan projection.
- RE capacity addition in FY25 is 4,33,810 MU which is significantly less than the projections in RA plans 5,67,959 MU.

[10] https://cea.nic.in/wp-content/uploads/resd/2025/04/Broad_Overview_of_RE_Generation_March_2025.pdf

- The actual CUF in FY 25 is 22.5% which is lower than 26% which is the projections in RA plans of States.
- The actual national level RCO achievement is only 23.7% as against the target of 29.9% which is under achieved for FY25.

5.3. Step 1: Compute RE required to meet RCO

The 20th EPS report covers projections of ex-bus energy requirement at State and national level. As per 20th EPS report, all India ex-bus energy requirement is as follows:

Particular	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30
All India Energy Requirement as per 20th EPS (MU)	16,94,634	17,96,627	19,07,835	20,21,072	21,39,125	22,79,676

Table 12 All India Energy Requirement

(Source- 20th EPS Report)

Note: *For our analysis RPO/ RCO targets are computed on ex-bus energy requirements including nuclear energy, although MoP RCO Notification dated 27 Sept 2025 specify that RCO shall be applicable on energy requirement excluding nuclear energy.*

Whereas it is observed that actual ex bus energy requirement at all India level has reached to 18,24,220 MUs in FY 2024-25 which is 8% higher than the EPS projection for FY 2024-25. Considering the deviation/ increase in actual energy requirement in FY 2024-25, ex-bus energy requirement from FY 2025-26 to FY 2029-30 is forecasted with 6% CAGR considering past trend of growth rate as well as CAGR taken in 20th EPS report. Based on the forecasted ex-bus energy requirement and MoP's RCO targets for FY 2026 to FY 2030, the RE requirement to meet national-level RCO targets has been derived as follows:

Particular	Unit	FY 26	FY 27	FY 28	FY 29	FY 30
All India Energy Requirement (A)	MU	19,33,673	20,49,694	21,72,675	23,03,036	24,41,218
MoP RCO Targets (B)	%	33.01%	35.95%	38.81%	41.37%	43.33%

Particular	Unit	FY 26	FY 27	FY 28	FY 29	FY 30
RE required to meet RPO/ RCO (MU) (C=A*B)	MU	6,38,306	7,36,865	8,43,215	9,52,766	10,57,780

Table 13 RE required to meet RPO/ RCO

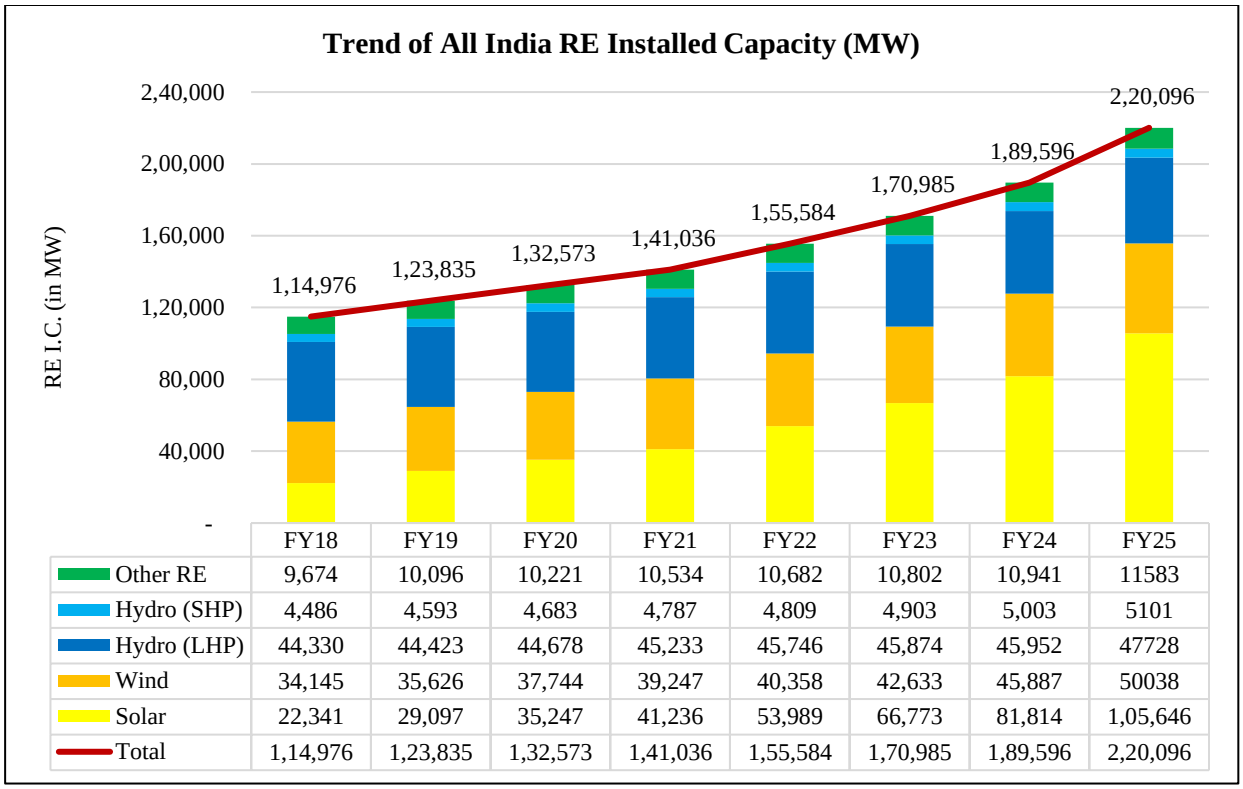
(Source- Consultant analysis)

5.4. Step 2: RE available at all India level

Cases have been developed for projecting RE capacity addition at the national level to evaluate achievable RE capacity by FY 2029–30 under different scenarios. These cases aim to assess whether the 500 GW RE target by FY 2030 will be met. The cases are as follows::

- **Case 1 - RE Capacity Addition projections as per State wise RA Plans:** In this case scenario the RE capacity addition projections from FY 26 to FY 30 are made based upon the resource adequacy plans of CEA available for the States considering existing, planned and additional RE capacity additions.
- **Case 2 - RE capacity addition projections as per 3-year CAGR:** In this case scenario the RE capacity addition projections are done as per the 3-year CAGR of source wise capacity addition from 2022-2025. Accordingly, projections are made from FY 26 to FY 30.
- **Case 3 - RE capacity addition projections assuming 50 GW and above capacity addition YoY:** In this case the RE capacity addition projections are done considering 50 GW-58 GW of capacity addition Year-on-Year (YoY) starting from FY 26 to FY 30.

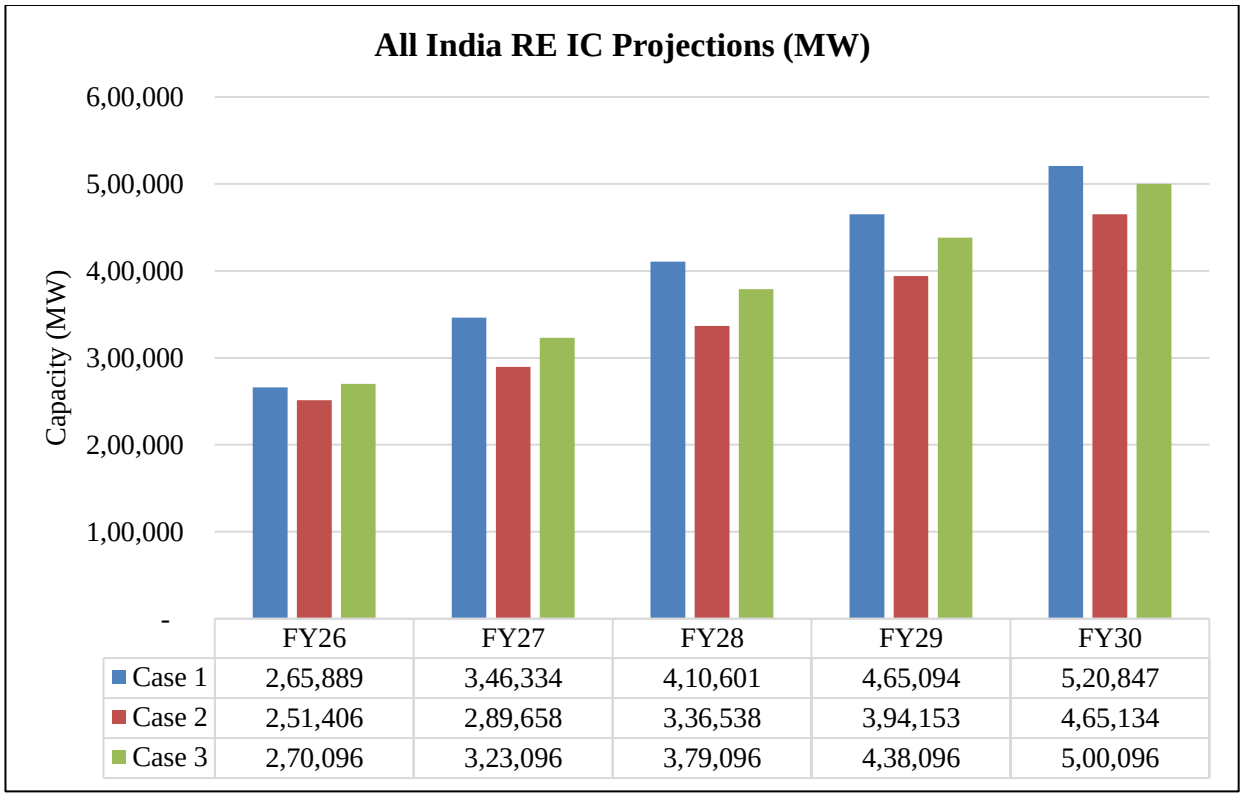
All India RE installed capacity from FY 18 to FY25 is as below:



	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Other RE	9,674	10,096	10,221	10,534	10,682	10,802	10,941	11583
Hydro (SHP)	4,486	4,593	4,683	4,787	4,809	4,903	5,003	5101
Hydro (LHP)	44,330	44,423	44,678	45,233	45,746	45,874	45,952	47728
Wind	34,145	35,626	37,744	39,247	40,358	42,633	45,887	50038
Solar	22,341	29,097	35,247	41,236	53,989	66,773	81,814	1,05,646
Total	1,14,976	1,23,835	1,32,573	1,41,036	1,55,584	1,70,985	1,89,596	2,20,096

Figure 5: Trend of all India source wise RE installed capacity from FY 18 to FY 25 (MW)

From the past capacity addition trend, it is observed that YoY RE capacity addition increased significantly in past 3-4 years. The 3-year CAGR of RE capacity addition from FY22 to FY 25 is ~12%. Higher capacity addition is observed in solar technology followed by wind and hydro. Projections of all India RE capacity addition possible from FY26 to FY30 as per 3 cases defined are as follows:



	FY26	FY27	FY28	FY29	FY30
Case 1	2,65,889	3,46,334	4,10,601	4,65,094	5,20,847
Case 2	2,51,406	2,89,658	3,36,538	3,94,153	4,65,134
Case 3	2,70,096	3,23,096	3,79,096	4,38,096	5,00,096

Figure 6: Projections of all India RE installed capacity under Case 1, 2 & 3 (MW)

As per case 1 i.e., State wise RA plans of CEA, RE capacity will reach up to 520 GW by FY 30 whereas as per case 2 and case 3, it will reach up to 465 GW (based on 12% CAGR in past 3 years) and 500 GW (assuming 50-58 GW capacity addition possible YoY) respectively. By using RE capacity projections under 3 cases and technology wise CUF/ PLF achieved in past, RE available is computed to estimate RPO/RCO gap or surplus for different case scenarios.

RPO/ RCO achievement possible under Case 1:

The RE capacity addition projections in this case are as per the Resource Adequacy (RA) plans considering existing, planned and additional capacity additions.

Particular	Unit	FY 26	FY 27	FY 28	FY 29	FY 30
All India Energy Requirement (A)	MU	19,33,673	20,49,694	21,72,675	23,03,036	24,41,218
MoP RCO Targets (B)	%	33.01%	35.95%	38.81%	41.37%	43.33%

Particular	Unit	FY 26	FY 27	FY 28	FY 29	FY 30
RE required to meet RPO/ RCO (MU) (C=A*B)	MU	6,38,306	7,36,865	8,43,215	9,52,766	10,57,780
Composite CUF at national level (D) (D = G/F*8.76) (Derived based on State wise & technology wise CUF as per Annexure 7)	%	**24.8%**	**24.4%**	**24.2%**	**24.0%**	**23.9%**
RE Capacity requirement to meet RCO (E)	MW	3,14,895	3,63,290	4,14,423	4,66,119	5,14,739
RE Capacity Addition possible (as per RA plans) (F)	MW	2,65,889	3,46,334	4,10,601	4,65,094	5,20,847
RE Generation Possible (G)	MU	5,78,780	7,40,517	8,71,868	9,79,544	10,89,228
RPO/RCO Gap (-)/ Surplus (H=G-C)	MU	-59,525	3,652	28,653	26,778	31,448
% RPO/ RCO Achievement (I=G/A)	%	**29.93%**	**36.13%**	**40.13%**	**42.53%**	**44.62%**

Table 14 RPO/ RCO Achievement at India level as per Case 1

(Source- Consultant analysis)

Under case 1, it is observed that the RPO/RCO is under achieved in FY 26 with an RE capacity of 265 GW and the RPO/RCO is achieved for all the years from FY 27 to FY 30 with the growth in the RE capacity addition from 346 GW in FY 26 to 520 GW in FY 30.

RPO/ RCO achievement possible under Case 2:

The RE capacity addition projections in this case are considered as per the 3-year CAGR of capacity addition from 2022-2025.

Particular	Unit	FY 26	FY 27	FY 28	FY 29	FY 30
All India Energy Requirement (A)	MU	19,33,673	20,49,694	21,72,675	23,03,036	24,41,218

Particular	Unit	FY 26	FY 27	FY 28	FY 29	FY 30
MoP RCO Targets (B)	%	33.01%	35.95%	38.81%	41.37%	43.33%
RE required to meet RPO/ RCO (MU) (C=A*B)	MU	6,38,306	7,36,865	8,43,215	9,52,766	10,57,780
Composite CUF at national level (D) (D = G/F*8.76) (Calculated based on technology wise CUF as per Annexure 8)	%	**23.7%**	**23.7%**	**23.8%**	**24.0%**	**24.2%**
RE Capacity requirement to meet RCO (E)	MW	3,14,895	3,63,290	4,14,423	4,66,119	5,14,739
RE Capacity Addition possible (with 3 Yr CAGR) (F)	MW	2,51,406	2,89,658	3,36,538	3,94,153	4,65,134
RE Generation Possible (G)	MU	5,21,250	6,02,121	7,02,921	8,28,969	9,87,017
RPO/RCO Gap (-)/ Surplus (MU) (H=G-C)	MU	-1,17,055	-1,34,744	-1,40,294	-1,23,797	-70,763
% RPO/ RCO Achievement (I=G/A)	%	**26.96%**	**29.38%**	**32.35%**	**35.99%**	**40.43%**

Table 15 RPO/ RCO Achievement at India level as per Case 2

(Source- Consultant analysis)

The RE capacity addition possible with 3-Year CAGR is 251 GW in FY 26 against which RPO/RCO achievement can be 26.96% against the target of 33.01% in FY 26. With 465 GW RE capacity addition in FY 30, the RPO/RCO achievement will be 40.43% against the target of 43.33% in FY 30.

It is observed that the RPO/RCO will be under achieved for all the years from FY 26 to FY 30 despite the growth in the RE capacity from 251 GW in FY 26 to 465 GW in FY 30.

RPO/ RCO achievement possible under Case 3:

The RE capacity addition projections under this case are assuming 50 GW and above capacity addition Year-on-Year (YoY).

Particular	Unit	FY 26	FY 27	FY 28	FY 29	FY 30
All India Energy Requirement (Ex-bus) (A)	MU	19,33,673	20,49,694	21,72,675	23,03,036	24,41,218
MoP RCO Targets (B)	%	33.01%	35.95%	38.81%	41.37%	43.33%
RE required to meet RPO/ RCO (MU) (C=A*B)	MU	6,38,306	7,36,865	8,43,215	9,52,766	10,57,780
Composite CUF at national level (D) (D = G/F*8.76) (Calculated based on technology wise CUF as per Annexure 9)	%	**23.7%**	**23.8%**	**24.0%**	**24.3%**	**24.5%**
RE Capacity requirement to meet RCO (E)	MW	3,14,895	3,63,290	4,14,423	4,66,119	5,14,739
RE Capacity Addition possible (Assuming 50 GW Cap. Add. YoY) (F)	MW	2,70,096	3,23,096	3,79,096	4,38,096	5,00,096
RE Generation Possible (G)	MU	5,60,507	6,74,224	7,97,604	9,30,977	10,74,670
RPO/ RCO Gap (-)/ Surplus (H=G-C)	MU	-77,799	-62,641	-45,611	-21,789	16,890
% RPO/ RCO Achievement (I=G/A)	%	**29.0%**	**32.9%**	**36.7%**	**40.4%**	**44.0%**

Table 16 RPO/ RCO Achievement at India level as per Case 3

(Source- Consultant analysis)

Under Case 3, even with RE capacity increasing from 270 GW in FY 26 to 438 GW in FY 29, the RPO/RCO targets will not be fully met in these years. By FY 30, with total RE capacity reaching around 500 GW, the national RPO/RCO target of 43.33% will be achieved, slightly exceeding it at 44%.

5.5. RCO achievement under Case 1, 2, 3

The RCO achievement under different case scenarios are summarized below:

Particular	FY 26	FY 27	FY 28	FY 29	FY 30
RPO/ RCO Targets as per MoP	33.01%	35.95%	38.81%	41.36%	43.33%
Case 1: % RPO/ RCO Achievement as per RA Plans	29.93%	36.13%	40.13%	42.53%	44.62%
Case 2: % RPO/ RCO Achievement as per 3 Year CAGR	26.96%	29.38%	32.35%	35.99%	40.43%
Case 3: % RPO/ RCO Achievement assuming 50 GW & above cap. add. YoY	29.0%	32.9%	36.7%	40.4%	44.0%
Suggested RPO/ RCO trajectory at National level	**29.0%**	**33.0%**	**37.0%**	**40.0%**	**43.0%**

Table 17 Comparison of RPO/RCO trajectories as per different case scenarios

(Source- Consultant analysis)

The RPO/RCO trajectory setup by MoP ranges from 33.01% in FY26 to 43.33% in FY 30. Based on analysis carried out for different case scenarios it is observed that under Case 1 RE capacity addition projections as per the Resource Adequacy (RA) plans the RPO/RCO is under achieved for FY 26 at 29.93% but achieved from FY 27 to FY 30 in the range of 36.13% to 44.62%.

Under Case 2 RE capacity addition projections are considered as per the 3-year CAGR the RPO/RCO is under achieved for all years from FY 26 to FY 30 in the range of 26.96% to 40.43%.

Under Case 3 RE capacity addition projections assumes 50 GW and above capacity addition Year-on-Year (Y0Y) the RPO/RCO is under achieved for all years from FY 26 to FY 29 in the range of 29.0% to 40.4%, but for FY 30 the RPO achievement is 44.0% meeting the RPO/RCO target of 43.33% by FY 30.

Based on RE capacity addition forecasted under Case 1, Case 2 And Case 3, RE available is estimated to evaluate RPO achievement status by FY30 at all India level. The RPO/RCO achievement at all India level is mainly dependent on the pace of technology wise RE capacity additions across multiple States and CUF of technologies.

Considering the current capacity addition trend projection and the RPO/RCO achievement under different case scenarios it is proposed that Case 3 would be the most suitable trajectory which can be achieved at the national level by FY 30 also meets the 500 GW RE capacity addition plan set by Government of India. Accordingly, possible RPO/ RCO achievement at national level is recommended as specified in table above with the objective of achieving a national level target of 43% in FY30.

6. Analysis of State level possible RPO/ RCO achievement by FY30

Potential of RE, RE Installed Capacity and the contracted RE capacity in each State varies from State to State. As per past RPO achievement data from FY 22 to FY 25, it is observed that many State DISCOMs are not able to achieve the specified RPO targets by SERCs. Even DISCOMs in RE-rich States have not always met the specified targets due to technical and operational challenges. Considering these challenges and projected RE contracted capacity, it is likely that not all States will be able to achieve uniform RPO/RCO targets. Hence, it is important to evaluate possible RPO/ RCO achievements at State level to propose appropriate regulatory interventions to achieve national level RPO/ RCO target.

State-level RPO/RCO achievement analysis is based on the States' RA reports, using the available data. State-wise possible RPO/RCO achievement is computed based on the following factors:

a. State-wise energy requirement at ex-bus level, based on all-India projections with 6% CAGR and State share in total energy requirement as per the 20th EPS report (Annexure 3).

b. The projections of contracted RE capacity from FY 26 to FY30 as per the resource adequacy (RA) plans for States by CEA (Annexure 10).

c. Technology wise CUF/ PLF of States as per Annexure 4.

d. MoP RCO targets based on the revised RCO notification dated 27th September 2025.

Based on above parameters, RE required to meet RPO/RCO, RE available in States based on capacity & CUF/ PLF is computed to derive State wise RPO/RCO gap or surplus and possible RPO/RCO achievement.

State level possible RPO/ RCO achievement based on RA plans

State-wise RPO/RCO achievement based on RA plans from FY26 to FY30 is shown in the table below. The sample calculations to derive possible achievement at State level for Andhra Pradesh, Himachal Pradesh and Uttar Pradesh is elaborated in Annexure 6. It is to be noted that the RPO/RCO targets here are computed based on the States' ex-bus energy requirements including nuclear energy, whereas the MoP RCO Notification dated 27 September 2025 specifies applicability excluding nuclear energy.

States/UTs	FY26	FY27	FY28	FY29	FY30
Andhra Pradesh	37%	39%	39%	39%	42%
Assam	33%	46%	51%	59%	63%
Bihar	26%	32%	34%	37%	39%

States/UTs	FY26	FY27	FY28	FY29	FY30
Chhattisgarh	17%	26%	30%	32%	34%
Delhi	26%	29%	30%	32%	32%
Gujarat	31%	34%	40%	44%	46%
Himachal Pradesh	61%	70%	82%	84%	85%
Kerala	33%	34%	36%	39%	41%
Meghalaya	71%	70%	68%	66%	65%
Odisha	35%	36%	35%	34%	35%
Punjab	33%	38%	45%	45%	45%
Uttar Pradesh	20%	29%	37%	44%	47%
Jammu & Kashmir Ladakh	44%	58%	57%	54%	52%
Rajasthan	32%	42%	46%	46%	47%
Uttarakhand	48%	47%	45%	49%	47%
Chandigarh	72%	75%	78%	76%	78%
Goa	26%	39%	45%	51%	53%
Daman & Diu	3%	3%	2%	2%	2%
Madhya Pradesh	30%	36%	41%	42%	44%
Maharashtra	27%	36%	36%	38%	39%
Dadra & Nagar Haveli	0%	0%	0%	0%	0%
Telangana	37%	40%	43%	46%	49%
Karnataka	47%	51%	56%	64%	75%
Tamil Nadu	34%	38%	40%	43%	48%
DVC	11%	49%	49%	49%	47%
Puducherry	3%	3%	3%	3%	3%
Jharkhand	21%	24%	27%	29%	30%
West Bengal	16%	39%	48%	49%	50%
Sikkim	62%	59%	85%	80%	76%
Arunachal Pradesh	93%	93%	93%	93%	93%

States/UTs	FY26	FY27	FY28	FY29	FY30
Tripura	36%	34%	34%	36%	39%
Manipur	51%	49%	46%	46%	46%
Nagaland	47%	62%	64%	64%	65%
Haryana	31%	34%	35%	37%	37%
Andaman & Nicobar	15%	15%	15%	14%	14%
Lakshadweep	11%	10%	10%	10%	9%
Mizoram	45%	41%	38%	36%	36%
All India	**30%**	**36%**	**40%**	**43%**	**45%**
MoP RCO Target	**33.0%**	**36.0%**	**38.8%**	**41.4%**	**43.3%**

Table 18 State wise possible RCO achievement based on RA plans

(Source- Consultant analysis)

The States consistently meeting or exceeding the RCO targets are Assam, Himachal Pradesh, Meghalaya, Jammu & Kashmir and Ladakh, Uttarakhand, Chandigarh, Telangana, Karnataka, Tamil Nadu, Sikkim, Arunachal Pradesh, Manipur and Nagaland have achieved the RPO/RCO compliance as per target set by MoP for all the years from FY 26 to FY 30.

The remaining States, including Andhra Pradesh, Bihar, Chhattisgarh, Delhi, Gujarat, Kerala, Odisha, Punjab, Uttar Pradesh, Rajasthan, Goa, Daman & Diu, Dadra & Nagar Haveli, DVC, Puducherry, Jharkhand, West Bengal, Tripura, Haryana, Andaman & Nicobar Islands, Lakshadweep, and Mizoram, may not achieve the RPO/RCO targets in one or more years from FY26 to FY30.

The all- India level achievement stands at 30% in FY 26, 36% in FY 27, 40% in FY 28, 43% in FY 29 and 45% in FY 30 respectively. Except in FY 26 where a shortfall is observed to meet the target, for all the remaining years from FY 27 to FY 30 the targets for RCO can be met. It is possible to accomplish national level RCO trajectory with a combination of RE capacity addition in RE rich States and RE procurement strategies to be adopted by non-RE rich States. At the all-India level, the possible RPO achievement could reach 45% if the States follow RA plans with existing, planned and additional RE capacity additions, exceeding the target of 43.33% in FY30.

Key observations on State specific scenarios

States such as Assam, Himachal Pradesh, Meghalaya, Jammu & Kashmir and Ladakh, Uttarakhand,

Sikkim, Arunachal Pradesh, Manipur and Nagaland which have met the RCO targets are mainly the north-eastern and hilly States with huge hydro sources available with them.

States such as Chandigarh, Telangana, Karnataka and Tamil Nadu are among the few States apart from north-eastern and hilly States which have achieved the RCO targets mainly due to sources such as hydro, wind and solar as these are RE-rich States.

Andhra Pradesh, Gujarat, Kerala, Rajasthan, Madhya Pradesh and Maharashtra are some of the RE-rich States which have huge RE potential available with them but still they cannot comply with the RCO targets set by MoP.

Bihar, Chhattisgarh, Delhi, Punjab, Uttar Pradesh, Odisha, Goa, Daman & Diu, Dadra & Nagar Haveli, DVC, Puducherry, Jharkhand, West Bengal, Tripura, Haryana, Andaman & Nicobar Islands, Lakshadweep and Mizoram are the non-RE rich States/ UTs with low RE potential to comply with the RCO targets set by MoP.

Need for grouping of States to achieve national level target

Considering the State wise variation in possible RCO achievement and objective to achieve national level target of 43%, differential approach with common goal can be adopted. The differential approach can be implemented by grouping of the States for setting up the State-wise RCO trajectory. The grouping of States can be based on possible RCO achievement as per the RA plans in FY 26 as per the graph shown below:

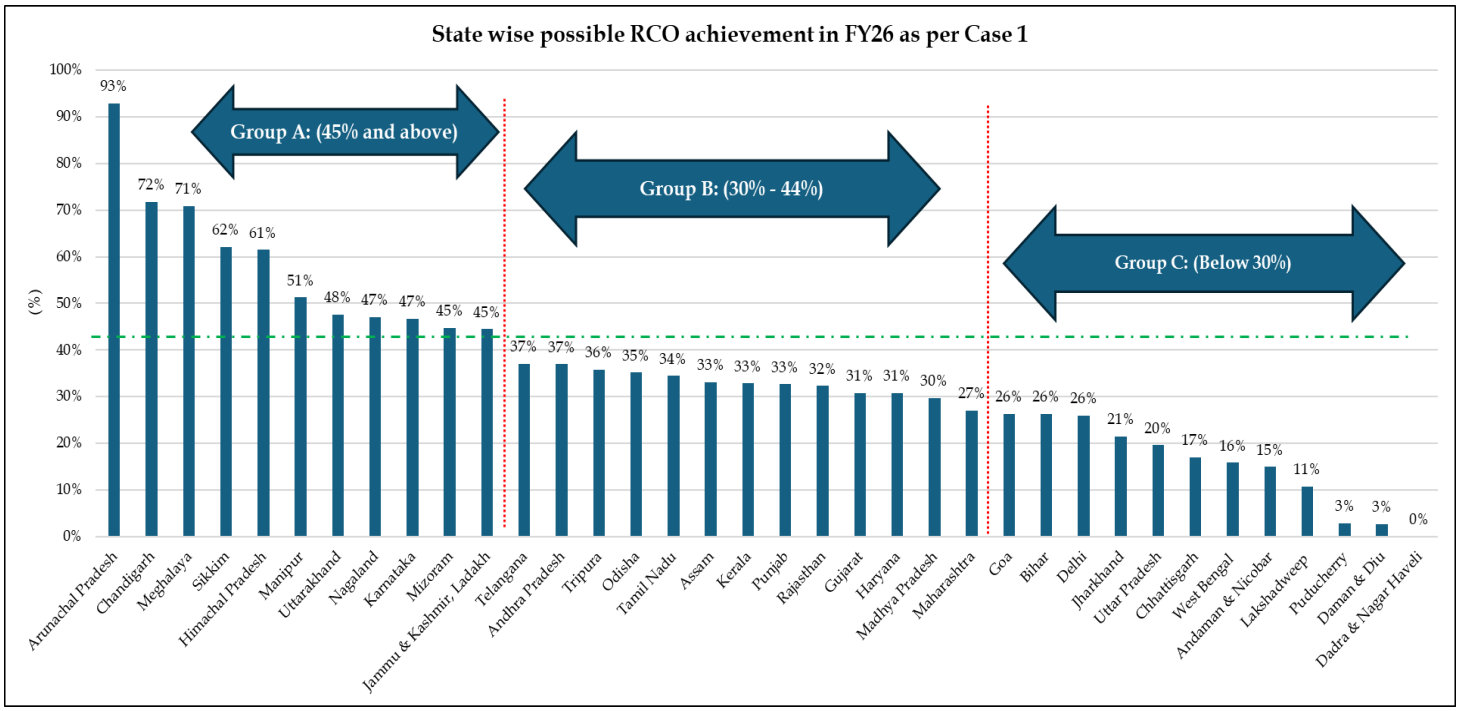


Figure 7: Grouping of States based on RCO achievement in FY 26

(Maharashtra is one of the RE rich States. Hence, although achievement as per RA plans as well as MYT Order of MSEDCL is lower in FY26, it is considered in Group B)*

- **Approach for setting State wise RCO trajectory**
  - **Step 1:** Grouping of States based on possible achievement as per RA plans in FY26
  - **Step 2:** Set incremental RCO trajectory from FY 26 to FY30 as follows:
    - **Group A:** RCO based on achievement in FY26
      - **Group A1:** Constant for Special Category States like Northeastern & Hilly region
      - **Group A2:** RE rich States with 2.5% increase YoY
    - **Group B**: RCO based on achievement in FY26 with 3.5% increase YoY
    - **Group C**: RCO based on achievement in FY26 with 4.5% increase YoY

Based on the above approach and grouping of States as per figure 6, the proposed RCO trajectory from FY 26 to FY 30 is given below and accordingly, possible RCO achievement at all-India level is calculated.

Groups	States/UTs	FY26	FY27	FY28	FY29	FY30
Group A: 45% and above	Arunachal Pradesh	93.0%	93.0%	93.0%	93.0%	93.0%
	Chandigarh	72.0%	72.0%	72.0%	72.0%	72.0%
	Meghalaya	71.0%	71.0%	71.0%	71.0%	71.0%
	Sikkim	63.0%	63.0%	63.0%	63.0%	63.0%
	Himachal Pradesh	62.0%	62.0%	62.0%	62.0%	62.0%
	Manipur	52.0%	52.0%	52.0%	52.0%	52.0%
	Uttarakhand	48.0%	48.0%	48.0%	48.0%	48.0%
	Nagaland	48.0%	48.0%	48.0%	48.0%	48.0%
	Mizoram	45.0%	45.0%	45.0%	45.0%	45.0%
	Jammu & Kashmir, Ladakh	45.0%	45.0%	45.0%	45.0%	45.0%
	Karnataka	47.0%	49.5%	52.0%	54.5%	57.0%
Group B: 30% to 44%	Telangana	36.5%	40.0%	43.5%	47.0%	50.5%
	Andhra Pradesh	33.5%	37.0%	40.5%	44.0%	47.5%
	Tripura	31.5%	35.0%	38.5%	42.0%	45.5%
	Odisha	33.5%	37.0%	40.5%	44.0%	47.5%
	Tamil Nadu	34.5%	38.0%	41.5%	45.0%	48.5%
	Maharashtra	27.0%	30.5%	34.0%	37.5%	41.0%
	Kerala	33.0%	36.5%	40.0%	43.5%	47.0%
	Haryana	30.0%	33.5%	37.0%	40.5%	44.0%
	Punjab	28.5%	32.0%	35.5%	39.0%	42.5%
	Rajasthan	27.5%	31.0%	34.5%	38.0%	41.5%
	Gujarat	26.5%	30.0%	33.5%	37.0%	40.5%
	Madhya Pradesh	30.0%	33.5%	37.0%	40.5%	44.0%
	Assam	34.0%	37.5%	41.0%	44.5%	48.0%
Group C: Below 30%	Goa	27.0%	31.5%	36.0%	40.5%	45.0%
	Bihar	27.0%	31.5%	36.0%	40.5%	45.0%
	Delhi	26.0%	30.5%	35.0%	39.5%	44.0%
	Jharkhand	22.0%	26.5%	31.0%	35.5%	40.0%
	Uttar Pradesh	20.0%	24.5%	29.0%	33.5%	38.0%
	Chhattisgarh	17.0%	21.5%	26.0%	30.5%	35.0%
	West Bengal	16.0%	20.5%	25.0%	29.5%	34.0%
	Andaman & Nicobar	15.0%	19.5%	24.0%	28.5%	33.0%
	Lakshadweep	11.0%	15.5%	20.0%	24.5%	29.0%
	Puducherry	3.0%	7.5%	12.0%	16.5%	21.0%
	Daman & Diu	3.0%	7.5%	12.0%	16.5%	21.0%
	Dadra & Nagar Haveli	3.0%	7.5%	12.0%	16.5%	21.0%
All India possible achievement*		29%	33%	37%	40%	44%
All India proposed trajectory		29%	33%	37%	40%	43%

Table 19 Proposed State wise RCO trajectory

(Source- Consultant analysis)

(Note: It is to be noted that, for computation purpose all India possible RCO achievable is computed based on overall State wise ex-bus energy requirement of the States incl. nuclear and waste to energy. Whereas as per MoP RCO notification dated 27 September 2025, the RCO would apply on Energy Consumption grossed up for losses excl. nuclear and waste to energy)

Based upon the grouping of the States and the proposed State wise RCO trajectory, possible RCO achievement at all-India is determined. As per the grouping and proposed State wise trajectory, national level trajectory proposed under Chapter 5 will be achieved by FY 30. Grouping of the States can be done based on capacity mix of RE in States, existing level (or baseline) of RPO accomplishment by the State up to FY25 and accordingly RCO with differential approach can be set for non-RE rich States with the objective to achieve suggested national level RCO trajectory above. Hence, the WG recommended that States adopt the proposed State-level trajectory to achieve the national target by FY30. It should be noted that Group A States are hydro-rich and dependent on rainfall. Therefore, in years of deficient rainfall or adverse hydrological conditions, penalties for shortfalls in hydro RPO compliance should not be applied to these States.

7. Financial Impact assessment on 12 States due to mandatory RCO targets

This chapter covers analysis of financial impact on APPC due to MoP RCO targets for the selected twelve States.

7.1. Approach for financial impact assessment

The major factors considered for the financial impact assessment are:

- Power Purchase Cost (PPC) of DISCOMs and States
- PPC of wind, solar, hydro, and other RE generators
- Transmission charges of State STUs, ISTS Transmission Charges / PGCIL Charges for inter-State RE procurement
- Cost of Grid Integration and Balancing cost including RE procurement from other States.

Impact of RCO on States is computed w.r.t. 2 approaches i.e., Approach 1 considers Uniform RCO targets and Approach 2 considers Differential RCO targets for States based on possible RCO Achievement and suggested RCO trajectory w.r.t. grouping of States.

Particulars	State	FY 26	FY 27	FY 28	FY 29	FY 30
Approach 1: Uniform RCO Targets	**All States**	33.01%	35.95%	38.81%	41.37%	43.33%
Approach 2: Differential RCO Targets for 12 States	Andhra Pradesh	34%	37%	41%	44%	48%
	Assam	34%	38%	41%	45%	48%
	Bihar	27%	32%	36%	41%	45%
	Chhattisgarh	17%	22%	26%	31%	35%
	Delhi	26%	31%	35%	40%	44%
	Gujarat	27%	30%	34%	37%	41%
	Himachal Pradesh	62%	62%	62%	62%	62%
	Kerala	33%	37%	40%	44%	47%
	Meghalaya	71%	71%	71%	71%	71%
	Odisha	34%	37%	41%	44%	48%
	Punjab	29%	32%	36%	39%	43%
	Uttar Pradesh	20%	25%	29%	34%	38%

Table 20 Approach for financial impact assessment

(Source- Consultant analysis)

The source-wise RPO/RCO mix for the 12 States is based on the availability of RE in each State. For example, in Himachal Pradesh, RCO targets for hydro and other RE are set excluding wind. The analysis shows that a uniform all-India RCO trajectory may not be suitable. A common goal with a differentiated approach, by grouping States into A, B, and C, is recommended, considering RE potential and ground realities in each State.

7.2. Key assumptions

To carry out the financial impact assessment of RCO on APPC the following inputs and assumptions are made:

- Power purchase quantum (RE and non-RE) for the 12 States is considered based on 20th EPS projections and RCO trajectory from MoP notifications.
- Transmission charges along with SLDC & PGCIL charges for each State as per Tariff Orders and projected with 3% rate YoY.
- Cost of Grid integration and balancing due to VRE is taken as 1.11 INR/ kWh.
- For PPC cost projections of RE and Non-RE sources, following assumptions considered:
    - For non-RE sources for each State respective composition of non-RE, historical trend with escalation factors.
    - Wind PPC is considered as per SECI bids results as INR 3.61/ Unit for all the States.
    - Solar PPC is considered as per SECI bids results as INR 2.48/ Unit for all the States.
    - Hydro PPC is taken from respective Tariff Orders of States for FY 2024-25 and projected with the incremental rate of 3% YoY.
    - For Other RE PPC, weighted average of PPC of solar and other RE is considered based on Tariff Orders of the States for FY 2024-25. It is further projected with the incremental rate of 3% YoY.

7.3. Impact of MoP RCO targets vis a vis State specific RCO on APPC

The State-wise impact is computed for FY 27 and FY 30 based upon the projected APPC as per SERC for FY 25 and the calculated APPC w.r.t. approach 1 i.e. Uniform RCO Targets and approach 2 i.e. Differential RCO Targets for 12 States.

Balancing costs are the cost incurred to ensure that electricity supply matches demand in real time. RE sources of energy, especially wind and solar, are infirm in nature. Their intermittent energy generation integration into the grid is not a major issue for small scale but for large scale integration of RE into the grid leads to voltage and frequency instability, as well as transmission congestion.

Factors impacting balancing costs are:

- High financial cost is the need to ensure standby thermal power capacity to meet demand when wind and solar power are not available, and to have flexible generation that can be ramped up and down in accordance with the VRE generation.
- Absence of large-scale energy storage systems, natural gas plants, and pumped storage hydropower plants to balance the load profile impacts thermal power plants.
- Impact on the deviation settlement mechanism (DSM) charges for interState flow of power, and extra transmission charges on account of lower utilization of transmission systems for evacuation of renewable energy.

Financial impact of balancing cost on States, all India and on RPO/RCO:

- Financial impact of RE integration to grid for States includes DSM charges and tariffs, balancing charges, standby charges and extra transmission charges amounting to Rs 1.57 per unit for Tamil Nadu and Rs 1.45 per unit for Gujarat.
- The pan-Indian impact for the year 2022, when RE capacity was expected to reach 175 GW, is estimated at Rs 1.11 per unit.
- In case this cost is shared by non-RE rich States in the ratio of them RE purchase, the charge per unit is expected to decline to about Rs 0.70 per unit.

Ways to reduce the impact of balancing costs:

- The installation of energy storage systems near the point of generation may prove to be more economical as compared to the augmentation of transmission systems.
- Setting up grid-scale battery energy storage systems can also be useful in wind-rich States, to prevent curtailment on account of congestion and lowering of DSM charges.
- Real-time power markets can be used for grid balancing and reducing the financial implications of intermittent renewable energy.

- Inter-country energy exchange can be carried out by supplying firm baseload power to neighboring hydro-rich countries such as Nepal and Bhutan during lean demand periods, in return for balancing hydropower from them to match peak demand.
- To have ancillary services on a permanent basis, in view of the increasing renewable penetration into the grid.

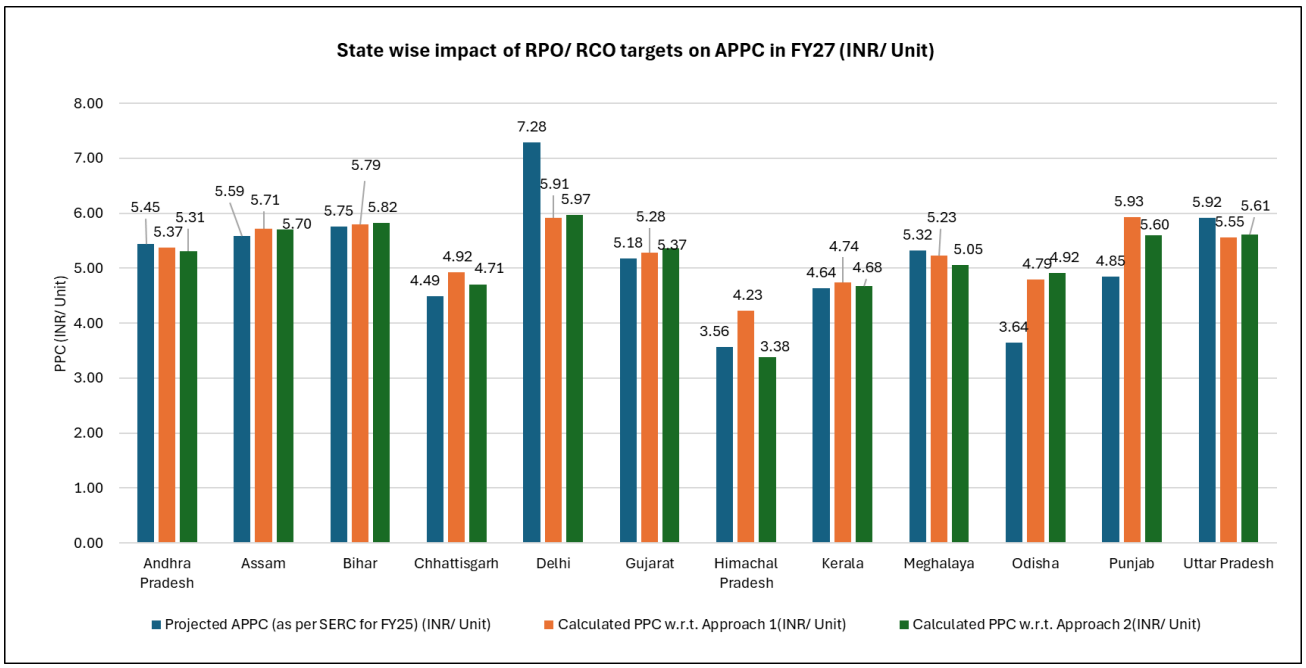


Figure 8 State wise impact of RPO/RCO targets on APPC in FY 27

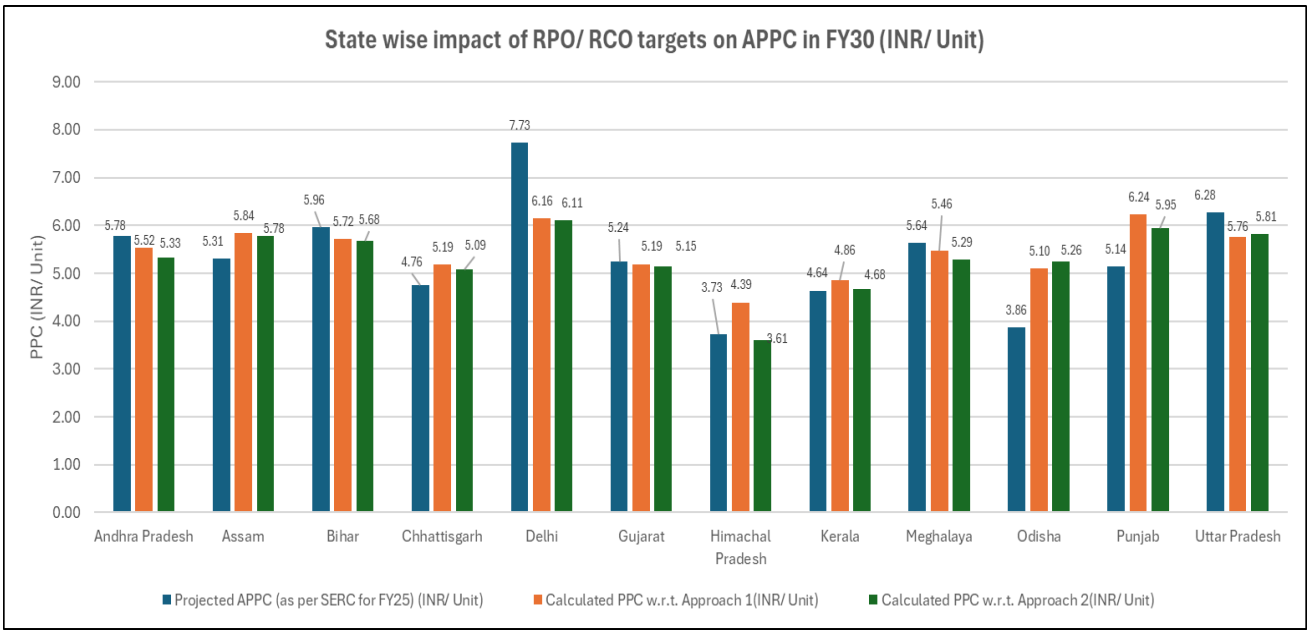


Figure 9: State wise impact of RPO/RCO targets on APPC in FY 30

From the above analysis it shows that balancing cost due to RE will impose additional cost burden on States like Assam, Chhattisgarh, Himachal Pradesh, Kerala, Punjab and Odisha resulting in incremental PPC.

7.4. Key observations

- Non-RE rich States will have to bear additional cost of power purchase if uniform RCO targets shall be made mandatory.
- APPC of States like Assam, Chhattisgarh, Himachal Pradesh, Punjab and Odisha calculated based on RCO targets, is higher compared to present APPC of the States/ DISCOMs approved by SERCs. For these States, RCO with differential approach will be beneficial to reduce APPC.
- For States like Assam, Bihar, Chhattisgarh, Himachal Pradesh, Kerala, hydro power purchase cost is equal to or less than wind PPC discovered through SECI bids.
- For States with variations in RE potential and RE availability, fungibility will be beneficial to reduce the power purchase cost as well as meet RCO targets.
- For Himachal Pradesh & Meghalaya, RCO targets as per differential approach could be higher due to higher availability of hydro power. It is beneficial to reduce PPC as well as procure higher RE to meet RCO.
- For non-RE rich States like Odisha and Uttar Pradesh, both uniform and differential approach may not have significant impact on APPC.

8. Key observations and recommendations

The RCO study indicates that achieving uniform RPO/RCO targets is difficult. Therefore, a common national goal with a differentiated approach for setting RCO targets is recommended.

8.1. Key observations from overall study

- If the States follow RA plans with existing, planned and additional RE capacity additions, the all-India level RPO achievement could reach 45% by FY 30 exceeding the target of 43.33% in FY30 set by MoP.
- For non-RE rich States such as Assam, Bihar, Chhattisgarh, Delhi, Punjab, Uttar Pradesh, and Odisha, achieving uniform RCO targets is difficult. A common national goal with a differential approach for setting RCO targets is recommended.
- Non-RE rich States will have to contract additional RE capacity to meet MoP RCO targets trajectory, which will result in incremental transmission charges and balancing cost for the States/ DISCOMs.
- From the overall analysis, it is suggested that fungibility amongst RE technology target is crucial but technology specific RCO targets can be set for RE rich States.
- For States in hilly region or non-rich States, SERCs may define RCO trajectories considering the present level, source wise RE potential and RE capacity available in States and the overall national goal.
- RCO achievement at All India level is mainly dependent on pace of technology wise RE capacity additions across multiple States and CUF of technologies.
- For differential approach, incremental RCO trajectory from FY 26 to FY 30 would be suitable with a YoY increase of 2.5% under Group A, 3.5% under Group B and 4.5% under Group C from the RCO based on achievement in FY26.
- At State level the possible RCO achievement is given below:

Particulars	FY 26	FY 27	FY 28	FY 29	FY 30
All India possible achievement based on grouping of States	29.0%	33.0%	37.0%	40.0%	44.0%

Table 21 Possible RCO achievement by States

- For all the years from FY 26 to FY 29 the possible RPO/RCO achievements are in line with MoP targets and overachieved in FY 30 at 44%, crossing the set target of 43.33%.

8.2. Recommendations- Proposed RCO trajectory at national level and State level

- Envisaged RE capacity addition is important to achieve to meet the set RCO targets by FY30.
- From the different case scenarios defined in the study, case 3 is most likely to be achieved by FY30 by achieving 500 GW RE capacity addition by FY30 which are in line with the Government of India targets.
- At national level, achieving MoP RCO trajectory in FY26 and FY27 could be difficult to achieve Hence, it is proposed to set national level RCO trajectory as below:

Particulars	FY 26	FY 27	FY 28	FY 29	FY 30
Proposed RCO trajectory at National level	29.0%	33.0%	37.0%	40.0%	43.0%

Table 22 National level Proposed RCO trajectory

(Source- Consultant analysis)

- Grouping of the States can be done based on capacity mix of RE in States, existing level (or baseline) of RPO accomplishment by the States up to FY25 and accordingly RCO with differential approach can be set for non-RE rich States with the objective to achieve suggested national level RCO trajectory above.

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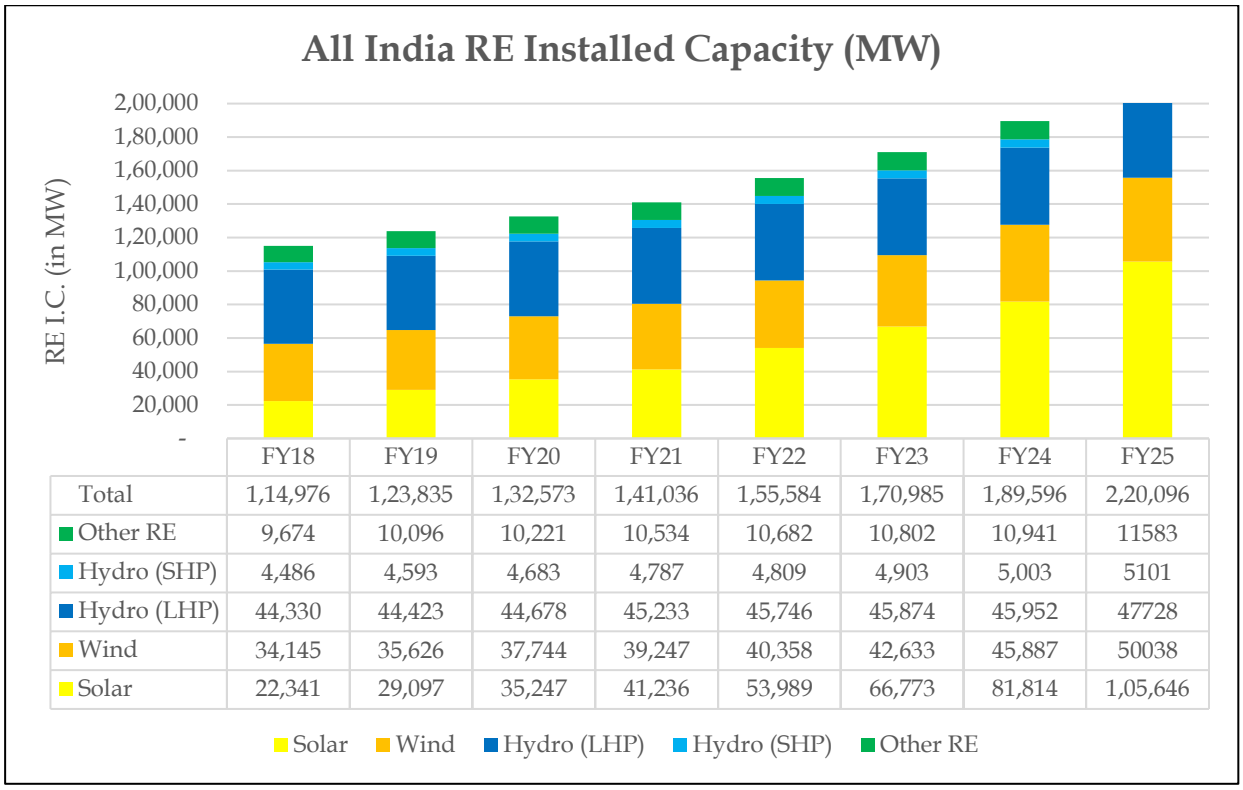
10. Annexures

The data collected for carrying out the overall RPO/RCO study is presented below in the annexures.

Annexure 1: RE IC from FY18 to FY25

The All-India RE installed capacity for the past seven years are presented below which shows an increase from 1,14,976 MW in FY 18 to 2,20,096 MW in FY 25.[11]



	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Total	1,14,976	1,23,835	1,32,573	1,41,036	1,55,584	1,70,985	1,89,596	2,20,096
Other RE	9,674	10,096	10,221	10,534	10,682	10,802	10,941	11583
Hydro (SHP)	4,486	4,593	4,683	4,787	4,809	4,903	5,003	5101
Hydro (LHP)	44,330	44,423	44,678	45,233	45,746	45,874	45,952	47728
Wind	34,145	35,626	37,744	39,247	40,358	42,633	45,887	50038
Solar	22,341	29,097	35,247	41,236	53,989	66,773	81,814	1,05,646

Figure 10 All India Installed RE Capacity from FY 18 to FY 25

Annexure 2: State wise Demand Projections as per 20th EPS

[11] https://mnre.gov.in/en/year-wise-achievement/

The State-wise demand projections as per 20th EPS report from FY 25 to FY 30.

States/UTs	FY25	FY26	FY27	FY28	FY29	FY30
Andhra Pradesh	84,245	90,889	98,162	1,05,792	1,13,859	1,23,361
Assam	13,454	14,279	15,151	16,079	17,069	18,183
Bihar	49,438	53,920	58,256	62,871	67,715	73,241
Chhattisgarh	41,223	44,130	47,208	50,475	53,900	57,983
Delhi	39,000	40,771	42,566	44,448	46,425	48,641
Gujarat	1,58,654	1,70,323	1,82,507	1,95,467	2,09,008	2,26,141
Himachal Pradesh	13,829	14,522	15,238	15,979	16,730	17,628
Kerala	30,729	32,281	33,903	35,597	37,384	39,464
Meghalaya	2,527	2,618	2,711	2,805	2,898	2,993
Odisha	44,985	46,689	48,627	50,810	53,180	56,316
Punjab	73,493	77,571	81,959	86,536	91,359	97,237
Uttar Pradesh	1,69,529	1,79,967	1,91,138	2,02,920	2,15,392	2,29,712
Jammu & Kashmir	21,382	21,800	22,507	23,700	24,912	26,132
Ladakh	259	288	321	357	398	443
Rajasthan	1,19,167	1,26,118	1,33,550	1,41,260	1,49,303	1,58,836
Uttarakhand	18,087	19,093	20,142	21,238	22,374	23,702
Chandigarh	1,827	1,869	1,911	1,953	1,997	2,047
Goa	5,038	5,270	5,512	5,765	6,032	6,350
Daman & Diu	3,121	3,277	3,437	3,622	3,815	4,042
Madhya Pradesh	1,11,424	1,18,751	1,28,844	1,37,111	1,45,662	1,55,770
Maharashtra	2,00,087	2,09,593	2,19,726	2,29,362	2,39,207	2,51,578

States/UTs	FY25	FY26	FY27	FY28	FY29	FY30
Dadra & Nagar Haveli	8,605	9,072	9,559	10,070	10,594	11,225
Telangana	82,316	87,414	92,967	98,578	1,04,383	1,10,971
Karnataka	80,922	84,132	88,232	91,852	95,486	99,758
Tamil Nadu	1,29,079	1,36,399	1,44,086	1,52,074	1,60,430	1,70,006
DVC	20,100	21,550	23,087	24,721	26,437	28,482
Puducherry	3,234	3,332	3,436	3,539	3,647	3,776
Jharkhand	22,112	23,846	25,463	27,140	28,873	31,096
West Bengal	67,518	71,820	76,352	81,182	86,018	91,771
Sikkim	730	773	819	867	919	974
Arunachal Pradesh	1,012	1,064	1,117	1,170	1,227	1,289
Tripura	1,991	2,073	2,222	2,306	2,391	2,481
Manipur	1,218	1,289	1,363	1,441	1,522	1,610
Nagaland	997	1,041	1,088	1,134	1,182	1,228
Andaman & Nicobar	357	363	368	373	378	383
Lakshadweep	62	64	66	68	71	73
Mizoram	1,063	1,156	1,252	1,357	1,464	1,577
Haryana	71,821	77,217	82,981	89,050	95,486	1,03,176
All India	**16,94,634**	**17,96,627**	**19,07,835**	**20,21,072**	**21,39,125**	**22,79,676**

Table 23 Demand Projections from FY 25 to FY 30

Annexure 3: Actual Demand in FY25 and projections with 6% CAGR

The State-wise demand projections are done considering share of demand of State as per 20th EPS report and national level demand projection done based on actual energy requirement in FY 25 and its projections with 6% CAGR for the years from FY 26 to FY 30.

States/UTs	FY25	FY26	FY27	FY28	FY29	FY30
Andhra Pradesh	90,687	97,822	1,05,461	1,13,728	1,22,583	1,32,103
Assam	14,483	15,368	16,278	17,285	18,377	19,471
Bihar	53,218	58,033	62,588	67,587	72,904	78,431
Chhattisgarh	44,375	47,496	50,718	54,261	58,030	62,092
Delhi	41,982	43,881	45,731	47,782	49,982	52,088
Gujarat	1,70,786	1,83,315	1,96,077	2,10,129	2,25,023	2,42,166
Himachal Pradesh	14,886	15,630	16,371	17,178	18,012	18,877
Kerala	33,079	34,743	36,424	38,267	40,249	42,260
Meghalaya	2,720	2,818	2,913	3,015	3,120	3,205
Odisha	48,425	50,250	52,243	54,621	57,255	60,307
Punjab	79,113	83,488	88,053	93,027	98,359	1,04,127
Uttar Pradesh	1,82,493	1,93,695	2,05,350	2,18,141	2,31,896	2,45,990
Jammu & Kashmir	23,017	23,463	24,181	25,478	26,821	27,984
Ladakh	279	310	345	384	428	474
Rajasthan	1,28,280	1,35,738	1,43,480	1,51,856	1,60,743	1,70,091
Uttarakhand	19,470	20,549	21,640	22,831	24,088	25,382
Chandigarh	1,967	2,012	2,053	2,099	2,150	2,192
Goa	5,423	5,672	5,922	6,197	6,494	6,800
Daman & Diu	3,360	3,527	3,693	3,894	4,107	4,328
Madhya Pradesh	1,19,944	1,27,809	1,38,424	1,47,396	1,56,823	1,66,808

States/UTs	FY25	FY26	FY27	FY28	FY29	FY30
Maharashtra	2,15,387	2,25,581	2,36,064	2,46,567	2,57,536	2,69,405
Dadra & Nagar Haveli	9,263	9,764	10,270	10,825	11,406	12,020
Telangana	88,611	94,082	99,880	1,05,972	1,12,381	1,18,835
Karnataka	87,110	90,550	94,793	98,742	1,02,803	1,06,827
Tamil Nadu	1,38,949	1,46,803	1,54,800	1,63,481	1,72,723	1,82,053
DVC	21,637	23,194	24,804	26,575	28,463	30,500
Puducherry	3,481	3,586	3,691	3,804	3,926	4,044
Jharkhand	23,803	25,665	27,356	29,176	31,085	33,300
West Bengal	72,681	77,298	82,029	87,272	92,609	98,274
Sikkim	786	832	880	932	989	1,043
Arunachal Pradesh	1,089	1,145	1,200	1,258	1,321	1,380
Tripura	2,143	2,231	2,387	2,479	2,574	2,657
Manipur	1,311	1,387	1,464	1,549	1,639	1,724
Nagaland	1,073	1,120	1,169	1,219	1,273	1,315
Andaman & Nicobar	384	391	395	401	407	410
Lakshadweep	67	69	71	73	76	78
Mizoram	1,144	1,244	1,345	1,459	1,576	1,689
Haryana	77,313	83,107	89,151	95,730	1,02,803	1,10,487
All India	**18,24,220**	**19,33,673**	**20,49,694**	**21,72,675**	**23,03,036**	**24,41,218**

Table 24 Actual Demand in FY25 and projections with 6% CAGR

(Source- Consultant analysis)

Annexure 4: State specific Technology wise CUF as per RA plans

The State wise and technology-wise CUF considered as per the RA plans are given below which is utilized in our calculations.

Sr. No.	State/ UT	Solar		Wind		Large Hydro		Small Hydro		Other RE (Biomass, Bagasse)	
		Existing	Planned	Existing	Planned	Existing	Planned	Existing	Planned	Existing	Planned
1	**Andaman & Nicobar**	17.00%	17.00%	18.00%	18.00%	-	-	30.00%	30.00%	-	-
2	**Andhra Pradesh**	21.80%	22.00%	20.80%	25%	23.00%	23.00%	17.00%	17.00%	20.00%	20.00%
3	**Arunachal Pradesh**	16.00%	18.00%	22.00%	33.00%	37.00%	45.00%	15.00%	15.00%	18.00%	18.00%
4	**Assam**	16.00%	18.00%	22.00%	33.00%	37.00%	45.00%	15.00%	15.00%	18.00%	18.00%
5	**Bihar**	18.00%	21.00%	24.00%	24.00%	30.00%	30.00%	15.00%	15.00%	18.00%	18.00%
6	**Chandigarh**	18.49%	23.36%	24.36%	24.00%	25.00%	25.00%	18.00%	18.00%	18.00%	18.00%
7	**Chhattisgarh**	20.00%	21.00%	25.00%	25.00%	34.00%	35.00%	17.20%	17.20%	18.00%	18.00%
8	**D&NH**	19.54%	23.47%	27.16%	27.16%	18.00%	18.00%	15.00%	15.00%	0.00%	0.00%
9	**DD**	19.54%	23.47%	27.16%	27.16%	18.00%	18.00%	15.00%	15.00%	0.00%	0.00%
10	**Delhi**	24.00%	25.90%	0%	31.80%	46.00%	46.00%	15.00%	15.00%	75.00%	75.00%
11	**Goa**	19.54%	23.47%	27.16%	27.16%	40.00%	40.00%	15.00%	15.00%	18.00%	18.00%
12	**Gujarat (GUVNL)**	18.00%	18.00%	22.00%	27.00%	-	-	-	-	35%	35%

Sr. No.	State/ UT	Solar		Wind		Large Hydro		Small Hydro		Other RE (Biomass, Bagasse)	
		Existing	Planned	Existing	Planned	Existing	Planned	Existing	Planned	Existing	Planned
13	**Haryana**	27.00 %	30.00 %	33.00 %	35.00 %	47.00 %	47.00 %	15.00 %	15.00 %	18.00 %	18.00 %
14	**Himachal Pradesh**	10.00 %	10.00 %	27.50 %	27.50 %	55.00 %	55.00 %	47.85 %	47.85 %	18.00 %	18.00 %
15	**J&K and Ladakh**	18.49 %	23.36 %	24.36 %	24.00 %	45.00 %	45.00 %	25.00 %	25.00 %	20.00 %	20.00 %
16	**Jharkhand (JBVNL)**	18.00 %	22.00 %	27.00 %	27.00 %	31.00 %	31.00 %	25.00 %	25.00 %	18.00 %	18.00 %
17	**Karnataka**	20.50 %	24.00 %	22.20 %	33.00 %	37.00 %	37.00 %	15.00 %	15.00 %	20.00 %	20.00 %
18	**Kerala**	22.10 %	23.00 %	26.60 %	26.60 %	41.00 %	41.00 %	17.00 %	17.00 %	25.00 %	25.00 %

Table 25 State specific Technology wise CUF as per RA plans

(Source- State wise RA Plans by CEA)

Annexure 5: State specific RE capacity addition as per RA plans

The capacity addition as per the RA plans for FY 26 to FY 30 for all the States with different RE

technologies showing the possible RE capacity from 2,65,889 MW to 5,20,847 MW.

Particulars	FY26	FY27	FY28	FY29	FY30
Wind	48,259	59,393	70,870	81,381	95,794
Hydro	52,342	56,191	57,987	59,294	60,117
Other RE - Solar, Biomass, Other RE, PSP	1,65,288	2,30,750	2,81,744	3,24,419	3,64,937
Total RE Capacity Possible (MW)	**2,65,889**	**3,46,334**	**4,10,601**	**4,65,094**	**5,20,847**

Table 26 State specific RE capacity addition as per RA plans

(Source- Consultant analysis)

Annexure 6: RCO achievement as per RA plans (Case 1) for Andhra Pradesh, Himachal Pradesh and Uttar Pradesh

The RCO achievement as per RA plans (case 1) for Andhra Pradesh, Himachal Pradesh and Uttar Pradesh are shown below.

RCO achievement as per RA plans (Case 1) for States	FY25	FY26	FY27	FY28	FY29	FY30
RE available as per RA plans for Andhra Pradesh (A)	27,180	36,151	41,502	44,332	47,599	55,265
Demand Projections as per FY25 actual with 6% CAGR for Andhra Pradesh (B)	90,687	97,822	1,05,461	1,13,728	1,22,583	1,32,103
RCO achievement as per RA plans for Andhra Pradesh (C= A/B)	30%	37%	39%	39%	39%	42%
RE available as per RA plans for Himachal Pradesh (D)	9,444	9,607	11,540	14,027	15,174	16,043
Demand Projections as per FY25 actual with 6% CAGR for Himachal Pradesh (E)	14,886	15,630	16,371	17,178	18,012	18,877
RCO achievement as per RA plans for Himachal Pradesh (F= D/E)	63%	61%	70%	82%	84%	85%
RE available as per RA plans for Uttar Pradesh (G)	30,601	37,915	60,423	81,470	1,02,586	1,15,550
Demand Projections as per FY25 actual with 6% CAGR for Uttar Pradesh (H)	1,82,493	1,93,695	2,05,350	2,18,141	2,31,896	2,45,990
RCO achievement as per RA plans for Uttar Pradesh (I= G/H)	17%	20%	29%	37%	44%	47%

Table 27 RCO achievement as per RA plans (Case 1) for AP, HP and UP (Source- Consultant analysis)

Annexure 7: Composite CUF at national level as per the RA plans (case 1)

The composite CUF at national level is derived from RA plans for case 1 using the Possible RE generation and Projected RE Capacity Addition.

Particular	Unit	Particular	FY 26	FY 27	FY 28	FY 29	FY 30
All India Energy Requirement (Ex-bus) (A)	**MU**	**Energy Requirement (Ex-bus) (MU)**	19,33,673	20,49,694	21,72,675	23,03,036	24,41,218
MoP RCO Targets (%) (B)	**%**	Wind	1.45%	1.97%	2.45%	2.95%	3.48%
		Hydro	1.22%	1.34%	1.42%	1.42%	1.33%
		DRE	2.10%	2.70%	3.30%	3.90%	4.50%
		Other RE	28.24%	29.94%	31.64%	33.10%	34.02%
		Total RCO Target	**33.01%**	**35.95%**	**38.81%**	**41.37%**	**43.33%**
RE required to meet RPO/ RCO (MU) (C=A*B)	**MU**	Wind_INCR March 2024	28,038	40,379	53,231	67,940	84,954
		Hydro_INCR March 2024	23,591	27,466	30,852	32,703	32,468
		DRE	40,607	55,342	71,698	89,818	1,09,855
		Other RE	5,46,069	6,13,678	6,87,434	7,62,305	8,30,502
		Total RE Requirement	**6,38,306**	**7,36,865**	**8,43,215**	**9,52,766**	**10,57,780**
Technology wise CUF (%)of RE at all India level (D=G/F*8.76)	**%**	Wind	20%	20%	21%	21%	21%
		Hydro (LHP, SHP Avg)	33%	33%	33%	33%	33%
		DRE	18%	18%	18%	18%	18%
		Other RE - Solar	21%	22%	22%	23%	23%
		Composite CUF for all RE technologies - calculated	**24.8%**	**24.4%**	**24.2%**	**24.0%**	**23.9%**
RE Capacity Required to meet RCO	**MW**	Wind_INCR March 2024	15,830	22,518	29,327	36,985	45,703
		Hydro_INCR March 2024	8,039	9,360	10,514	11,145	11,064
		DRE	25,753	35,097	45,471	56,962	69,669

Particular	Unit	Particular	FY 26	FY 27	FY 28	FY 29	FY 30
(MW)		Other RE	2,65,274	2,96,315	3,29,111	3,61,027	3,88,302
		Wind - Old	45,887	45,887	45,887	45,887	45,887
(E = C/ D*8.76)		Hydro - Old	51,931	51,931	51,931	51,931	51,931
		Other RE - Excl. Wind, Hydro	1,67,456	1,98,497	2,31,293	2,63,209	2,90,484
		Total RE Capacity Requirement (MW)	**3,14,895**	**3,63,290**	**4,14,423**	**4,66,119**	**5,14,739**
Achievable RE Capacity Addition (Projection) (F)	**MW**	Wind	48,259	59,393	70,870	81,381	95,794
		Hydro	52,342	56,191	57,987	59,294	60,117
		DRE		-	-	-	-
		Other RE - Solar, Biomass, Other RE, PSP	1,65,288	2,30,750	2,81,744	3,24,419	3,64,937
		Total RE Capacity Possible (MW)	**2,65,889**	**3,46,334**	**4,10,601**	**4,65,094**	**5,20,847**
RE Generation Possible (G)	**MU**	Wind	1,00,162	1,26,178	1,54,165	1,79,245	2,13,855
		Hydro	1,73,240	1,86,831	1,93,776	1,98,206	2,00,804
		DRE	-	-	-	-	-
		Other RE - Solar, Biomass, Other RE	3,05,378	4,27,508	5,23,927	6,02,093	6,74,569
		Total RE Generation Possible (MU)	**5,78,780**	**7,40,517**	**8,71,868**	**9,79,544**	**10,89,228**

Table 28 Composite CUF at national level as per the RA plans (case 1)

(Source- Consultant analysis)

Annexure 8: Composite CUF at national level as per as per 3-year CAGR (case 2)

The composite CUF at national level as per as per 3-year CAGR for case 2 is computed using the Possible

RE generation and Projected RE Capacity Addition.

Particular	Unit	Particular	FY 26	FY 27	FY 28	FY 29	FY 30
All India Energy Requirement (Ex-bus) (A)	**MU**	**Energy Requirement (Ex-bus) (MU)**	19,33,673	20,49,694	21,72,675	23,03,036	24,41,218
MoP RCO Targets (%) (B)	**%**	Wind	1.45%	1.97%	2.45%	2.95%	3.48%
		Hydro	1.22%	1.34%	1.42%	1.42%	1.33%
		DRE	2.10%	2.70%	3.30%	3.90%	4.50%
		Other RE	28.24%	29.94%	31.64%	33.10%	34.02%
		Total RCO Target	**33.01%**	**35.95%**	**38.81%**	**41.37%**	**43.33%**
RE required to meet RPO/ RCO (MU) (C=A*B)	**MU**	Wind_INCR March 2024	28,038	40,379	53,231	67,940	84,954
		Hydro_INCR March 2024	23,591	27,466	30,852	32,703	32,468
		DRE	40,607	55,342	71,698	89,818	1,09,855
		Other RE	5,46,069	6,13,678	6,87,434	7,62,305	8,30,502
		Total RE Requirement	**6,38,306**	**7,36,865**	**8,43,215**	**9,52,766**	**10,57,780**
Technology wise CUF (%) of RE at all India level (D=G/F*8.76)	**%**	Wind	20%	20.5%	20.7%	21.0%	21.2%
		Hydro (LHP, SHP Avg)	33%	33.5%	33.5%	33.5%	33.5%
		DRE	18%	18.0%	18.0%	18.0%	18.0%
		Other RE - Solar	21%	21.8%	22.3%	22.8%	23.3%
		Composite CUF for all RE technologies - calculated	**23.7%**	**23.7%**	**23.8%**	**24.0%**	**24.2%**
RE Capacity Required to meet RCO (MW) **(E = C/ D*8.76)**	**MW**	Wind_INCR March 2024	15,830	22,518	29,327	36,985	45,703
		Hydro_INCR March 2024	8,039	9,360	10,514	11,145	11,064
		DRE	25,753	35,097	45,471	56,962	69,669
		Other RE	2,65,274	2,96,315	3,29,111	3,61,027	3,88,302
		Wind - Old	45,887	45,887	45,887	45,887	45,887
		Hydro - Old	51,931	51,931	51,931	51,931	51,931
		Other RE - Excl. Wind, Hydro	1,67,456	1,98,497	2,31,293	2,63,209	2,90,484
		Total RE Capacity Requirement (MW)	**3,14,895**	**3,63,290**	**4,14,423**	**4,66,119**	**5,14,739**

Particular	Unit	Particular	FY 26	FY 27	FY 28	FY 29	FY 30
Achievable RE Capacity Addition (Projection) (F) **(Considering 3 Yr CAGR)**	**MW**	Wind	53,755	57,749	62,040	66,649	71,601
		Hydro	53,609	54,402	55,206	56,022	56,850
		DRE	-	-	-	-	-
		Other RE - Solar, Biomass, Other RE	1,44,042	1,77,507	2,19,292	2,71,482	3,36,683
		Total RE Capacity Possible (MW)	**2,51,406**	**2,89,658**	**3,36,538**	**3,94,153**	**4,65,134**
RE Generation Possible (G)	**MU**	Wind	95,214	1,03,553	1,12,606	1,22,431	1,33,096
		Hydro	1,57,314	1,59,639	1,61,999	1,64,394	1,66,825
		DRE	-	-	-	-	-
		Other RE - Solar, Biomass, Other RE	2,68,722	3,38,928	4,28,317	5,42,144	6,87,097
		Total RE Generation Possible (MU)	**5,21,250**	**6,02,121**	**7,02,921**	**8,28,969**	**9,87,017**

Table 29 Composite CUF at national level as per as per 3-year CAGR (case 2)

(Source- Consultant analysis)

Annexure 9: Composite CUF at national level assuming 50 GW capacity addition YoY (case 3)

The composite CUF at national level assuming 50 GW capacity addition YoY for case 3 is computed using the Possible RE generation and Projected RE Capacity Addition.

Particular	Unit	Particular	FY 26	FY 27	FY 28	FY 29	FY 30
All India Energy Requirement (Ex-bus) (A)	**MU**	**Energy Requirement (Ex-bus) (MU)**	**19,33,673**	**20,49,694**	**21,72,675**	**23,03,036**	**24,41,218**
MoP RCO Targets (%) (B)	**%**	Wind	1.45%	1.97%	2.45%	2.95%	3.48%
		Hydro	1.22%	1.34%	1.42%	1.42%	1.33%
		DRE	2.10%	2.70%	3.30%	3.90%	4.50%
		Other RE	28.24%	29.94%	31.64%	33.10%	34.02%
		Total RCO Target	**33.01%**	**35.95%**	**38.81%**	**41.37%**	**43.33%**
RE required to meet RPO/ RCO (MU) (C=A*B)	**MU**	Wind_INCR March 2024	28,038	40,379	53,231	67,940	84,954
		Hydro_INCR March 2024	23,591	27,466	30,852	32,703	32,468
		DRE	40,607	55,342	71,698	89,818	1,09,855
		Other RE	5,46,069	6,13,678	6,87,434	7,62,305	8,30,502
		Total RE Requirement	**6,38,306**	**7,36,865**	**8,43,215**	**9,52,766**	**10,57,780**
Technology wise CUF (%) of RE at all India level (D=G/F*8.76)	**%**	Wind	20.2%	20.5%	20.7%	21.0%	21.2%
		Hydro (LHP, SHP Avg)	33.5%	33.5%	33.5%	33.5%	33.5%
		DRE	18.0%	18.0%	18.0%	18.0%	18.0%
		Other RE - Solar	21.3%	21.8%	22.3%	22.8%	23.3%
		Composite CUF for all RE technologies - calculated	**23.7%**	**23.8%**	**24.0%**	**24.3%**	**24.5%**
RE Capacity Required to meet RCO (MW) **(E = C/ D*8.76)**	**MW**	Wind_INCR March 2024	15,830	22,518	29,327	36,985	45,703
		Hydro_INCR March 2024	8,039	9,360	10,514	11,145	11,064
		DRE	25,753	35,097	45,471	56,962	69,669
		Other RE	**2,65,274**	**2,96,315**	**3,29,111**	**3,61,027**	**3,88,302**
		Wind - Old	45,887	45,887	45,887	45,887	45,887
		Hydro - Old	51,931	51,931	51,931	51,931	51,931
		Other RE - Excl. Wind, Hydro	1,67,456	1,98,497	2,31,293	2,63,209	2,90,484

Particular	Unit	Particular	FY 26	FY 27	FY 28	FY 29	FY 30
		Total RE Capacity Requirement (MW)	**3,14,895**	**3,63,290**	**4,14,423**	**4,66,119**	**5,14,739**
Achievable RE Capacity Addition (Projection) (F) **(Considering annual cap. Add. of 50 GW pa)**	**MW**	Wind	55,038	61,038	68,038	76,038	85,038
		Hydro	57,829	62,829	67,829	72,829	77,829
		DRE	-	-	-	-	-
		Other RE - Solar, Biomass, Other RE	1,57,229	1,99,229	2,43,229	2,89,229	3,37,229
		Total RE Capacity Possible (MW)	**2,70,096**	**3,23,096**	**3,79,096**	**4,38,096**	**5,00,096**
RE Generation Possible (G)	**MU**	Wind	97,486	1,09,450	1,23,492	1,39,678	1,58,073
		Hydro	1,69,697	1,84,369	1,99,042	2,13,714	2,28,386
		DRE	-	-	-	-	-
		Other RE - Solar, Biomass, Other RE	2,93,324	3,80,404	4,75,071	5,77,585	6,88,211
		Total RE Generation Possible (MU)	**5,60,507**	**6,74,224**	**7,97,604**	**9,30,977**	**10,74,670**

Table 30 Composite CUF at national level assuming 50 GW capacity addition YoY (case 3)

(Source- Consultant analysis)

Annexure 10: All India RE Capacity Addition possible as per RA plans

The projected RE capacity addition as per the RA plans for all the States is shown below for FY 26 to FY 30.

Particular	Unit	Particular	FY 26	FY 27	FY 28	FY 29	FY 30
RE Capacity Addition as per RA Plans (Projection)	**MW**	Wind	48,259	59,393	70,870	81,381	95,794
		Hydro	52,342	56,191	57,987	59,294	60,117
		Other RE - Solar, Biomass, Other RE, PSP	1,65,288	2,30,750	2,81,744	3,24,419	3,64,937
		Total RE Capacity Possible (MW)	**2,65,889**	**3,46,334**	**4,10,601**	**4,65,094**	**5,20,847**

Table 31 All India RE Capacity Addition possible as per RA plans for all States

(Source- Consultant analysis)